The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 80, NO. 22 CHICAGO, ILLINOIS JUNE 2, 1923

THE ROUTINE TREATMENT OF DIABETES WITH INSULIN

ELLIOTT P. JOSLIN, M.D.

BOSTON

Successful treatment of diabetes with insulin depends on the utilization of all those measures that have proved of the greatest value in the treatment of diabetes without insulin. These are: adherence to a diet which will keep the urine sugar-free; avoidance of over nutrition or extreme undernutrition, and a method of life compatible with the strength such a diet affords. A knowledge of the fundamental principles of the diet and of the food values of a few foods is essential; otherwise the insulin will be squandered and the patient placed in jeopardy.

Insulin does not cure diabetes. Insulin does not allow a diabetic to eat anything he desires. It is cruel for prominent individuals to make such statements and arouse false hopes. It is true that heretofore there has never been anything discovered as valuable for the diabetic as insulin; but diabetes, though subdued, is not yet conquered.

Insulin is no more dangerous than morphin, and it has these advantages: Whereas an excess of morphin leads directly to sleep, coma and death, an overdose of insulin causes a warning train of symptoms, beginning with nervousness and extreme hunger as the blood sugar drops below 0.07 per cent.; progressing to sweating and tremor, subconscious or evident, and ending with unconsciousness, as the blood sugar reaches 0.03 per cent.; and death is possible. Again, unlike the course in morphin poisoning, recovery follows the simplest of measures—the juice of an orange or from 1 to 3 teaspoonfuls of sugar—and takes place promptly within five or ten minutes. Recovery may be further expedited by 1 c.c. (15 minims) of a 1:1,000 solution of epinephrin subcutaneously administered, though this also is to be followed by the orange or sugar.

It is a mercy that at present insulin becomes inert when given by mouth, and that its use is restricted to a syringe. The medical profession cannot be too grateful to the Insulin Committee of Toronto for limiting the supply and the distribution for a few months. Consider for a moment what would happen if morphin was the drug discovered and then was at once sold over the counter. The useless pancreatic preparations of the past required no supervision; insulin does, because it is potent.

Insulin, nevertheless, should be and can be used by the general practitioner. This I have proved, because already 127 patients have been sent home from the hospital or boarding house across the street and are taking insulin under the supervision of their own physicians. There is no reason why any physician should not treat other patients, provided he spends one hour learning the diabetic diet, or makes certain that the patient knows it. This knowledge of diabetic arithmetic is a pivotal point in order to balance diet with drug with enough accuracy to justify the trouble of the treatment. If the diet much overbalances the drug, there will be free glycosuria, and the expense and pains are practically wasted. If the drug overbalances the diet, there is likely to be a reaction, always fraught with alarm; and, finally, if the physician does not know the diet, he may lose the confidence of his patient.

For example: Five weeks of dietetic treatment failed to control the severe diabetes of Alice S., last summer. With insulin she improved, and when it was time to go home, not her parents, but her old, overworked, country physician traveled nearly 200 miles to get her, to see for himself how she and other patients were treated, to observe for himself what they ate, and to hear them recite their lessons on food and insulin and sugar tests. Alice learned the diet for the doctor, and Dr. B. learned about insulin for Alice. The partnership has already earned a 40 per cent. dividend in weight for the child, and I fancy far more than that in joy for that faithful practitioner.

Intelligent patients can be taught the use of the diet and insulin in a week, and in two weeks the average patient can become free of acid and sugar, learn what is requisite either in hospital or in boarding house, or with a diabetically trained nurse in his own home. Thus, with education they accomplish with 5 units what would otherwise require 10 units. Blood sugar tests are very desirable, but I doubt whether one in ten of my patients has such a test once a month in his own home. The cost of one such test would probably supply them with insulin for a week, and they prefer the insulin. Instead of blood sugar tests, they depend on frequent Benedict tests of each single specimen of urine, of which the cost of one test is 1 cent. By testing the urine before and after meals they learn whether the relation between carbohydrate and insulin should be changed. If glycosuria is present and yet the patient is receiving sufficient calories, carbohydrate is reduced until all specimens throughout the day are sugar-free; or, if the carbohydrate is below 30 gm. in the diet, insulin may be increased. After a few weeks of preliminary treatment, "single specimen" days are only occasionally necessary, and the patient is safe with a test of all that portion of the twenty-four hour quantity of the urine that is voided at home.

The first diet given a diabetic patient showing glycosuria should approximate that which he has been taking, with these modifications: The calories should be reduced by a marked restriction in fat, and the protein limited to 1 gm. or less per kilogram of body weight; and it is desirable to begin with about 200 gm. of car-

bohydrate, or as much below that quantity as was in the patient's former diet, or, if that is unknown, with an equivalent of the grams of sugar in the urine. For use in the hospital, test and maintenance diets are useful; but advances in dietetic treatment and insulin force their constant modification, so that the one here shown must be regarded as tentative. It is a great advantage not to have invented a formula for computing diets, because one feels quite free to take the best of all systems. Having started the diet, one proceeds each day to the next diet in sequence until the urine is sugar-free. Fasting is practically never necessary for even one meal, since generally the patient becomes sugar-free on Test Diet 3 or 4. Then one skips to that maintenance diet which has about the same quantity of carbohydrate, and advances each day. If sugar returns, for instance, on the carbohydrate and protein and fat for the sixth day (C6 + PF6) and the patient is not receiving enough calories, one lowers the diet to C5 or C4 and advances the protein and fat (PF) to PF7 or PF8 or more as needed, or even adds extra fat in the form of cream or butter.

The place at which insulin is given is most frequently the arm, then the thigh, and lastly the buttock.

The average dose of insulin daily for 127 of my patients is 11 units. No patient is now taking in twenty-four hours more than 45 units, but three are taking as many as 30 units, while a considerable number (eighteen) receive less than 5 units a day.

The first of my patients chosen to receive insulin was selected because I knew of none more severe or more strictly faithful to every detail of treatment in the past:

Miss M., aged 42, who had had diabetes for five years, whose weight had fallen from 157 to 72 pounds (from 72 to 33 kg.); who could scarcely be kept sugar-free on any diet, and who had been down to the street but once in nine months, began insulin, Aug. 7, 1922. Since that date she has gained 20 pounds (9 kg.), has a normal blood sugar before and after breakfast, and is sugar-free while taking 10 units daily instead of the 35 units daily, which she at one time required. Her diet has been, carbohydrate, 25 gm.; protein, 43 gm.; fat, 105 gm., and I have now raised it to carbohydrate, 30 gm.; protein, 50 gm., and fat, 110 gm. I am content to have had the weight in my severest case of diabetes increase in eight months by 28 per cent., and to have reduced the dosage

TABLE 1.—*Insulin Diabetic Diets*

		Total Diet				Carbohydrate (C)						Protein and Fat (PF)					
	Diet	Carbohydrate	Protein	Fat	Calories	5% Vegetables	Orange	Oatmeal	Shredded Wheat	Uneeda	Potato	Egg	Cream 20% Fat	Bacon	Butter	Meat	Diet
Test	T. D. 1	181	46	44	1,304	300	300	..	3	4	240	3	120	..	..	...	1
	T. D. 2	101	25	43	981	300	300	..	1	2	120	3	120	..	..	...	2
	T. D. 3	66	24	37	698	300	300	..	½	2	...	2	120	..	..	...	3
	T. D. 4	34	15	30	466	300	200	..	..	..	...	1	120	..	..	...	4
Maintenance	C1 + PF1	14	15	30	386	300	...	..	..	..	...	1	120	..	..	...	1
	C2 + PF2	22	19	37	497	300	100	..	..	..	...	2	60	..	15	...	2
	C3 + PF3	32	24	37	567	600	100	..	..	..	...	2	60	..	15	...	3
	C4 + PF4	42	29	52	752	600	200	..	..	..	...	2	60	30	15	...	4
	C5 + PF5	52	32	68	930	600	200	15	..	..	...	2	60	30	30	...	5
	C6 + PF6	64	44	83	1,179	600	200	30	..	..	...	2	120	30	30	30	6
	C7 + PF7	74	52	88	1,296	600	300	30	..	..	...	2	120	30	30	60	7
	C8 + PF8	84	61	94	1,436	600	300	30	..	2	...	2	120	30	30	90	8
	C9 + PF9	98	65	106	1,606	600	300	30	½	2	...	2	180	30	30	90	9
	C10 + PF10	109	66	119	1,771	600	300	30	1	2	...	2	180	30	45	90	10
	C11 + PF11	135	80	135	2,075	600	300	30	1	2	120	2	240	30	45	120	11
	C12 + PF12	159	84	135	2,187	600	300	30	1	2	240	2	240	30	45	120	12

The first dose of insulin should be 1 unit. This is the amount necessary to lower the blood sugar of a 1 kilogram rabbit, fasting twenty hours, to 0.045 per cent. It is safer to begin with one unit, because I have known this to bring down the blood sugar of a diabetic patient with a tolerance for and while taking 91 gm. of carbohydrate to 0.03 per cent. Insulin is more often given than withheld at the hospital as soon as the diagnosis is definitely made, in order to meet the patient's wish to curtail hospital stay. Before the second meal, 2 units are given, 3 before the third, and so on up to 5 units, and then this quantity is given three times a day and increased or decreased as indicated. Sometimes the extract proves to be unnecessary after a couple of days. During this period the diet also is being changed. Once the patient is sugar-free, the attempt is made to get rid of the noon dose by shifting the carbohydrate as far as feasible to breakfast and supper, and decreasing the noon insulin by a unit each day. If unsparable, the omitted insulin is taken up again, but this time is divided between the doses before breakfast and supper.

The time at which insulin is given varies from one-quarter hour to one and one-half hours before meals, depending on the rapidity of absorption of carbohydrate from the stomach and insulin from the subcutaneous tissue, as estimated after observation of each individual patient.

of insulin from 35 units to 10 units. With the extra food allowed, she requires at least 5 units more of insulin. Her weight has again increased to 96 pounds (43.5 kg.). With the restricted diet, will she not again be able to reduce her insulin when her further gain in weight makes her once more underfed?

Patients omitting insulin through lack of supply must go to bed and restrict the diet one-third:

Thomas D., my faithful little patient, went home and, unfortunately, in the absence of his home physician, thought he could get along without insulin. After five days he became ill, an intercurrent respiratory infection occurred, coma developed, and he returned to the hospital to die in seven hours, Oct. 20, 1922. No other patient with coma has died at the New England Deaconess Hospital since Aug. 7, 1922.

The treatment of coma with insulin is spectacular, but coma is a diabetic accident, and, like all accidents, to be avoided. At the New England Deaconess Hospital, the lack of coma is to be attributed partly to the training given patients. They are taught, whenever ill from any cause to (1) go to bed; (2) keep warm; (3) take a glass of hot water, tea, broth, orange juice, or oatmeal water gruel every hour; (4) empty the bowels with an enema, and (5) call a physician, who, if he finds acidosis, probably will give them insulin, digitalis and caffein, and may wash out their stomachs. This freedom from coma is perhaps still more to be attributed to

the large general hospitals in Boston receiving such emergency cases. With the expansion of the Deaconess Hospital to 180 beds, more of these patients may enter.

In coma, insulin, from published reports, is best given in 10 unit doses every hour for about two to four doses, and then every other hour for four doses more, if necessary. One should be very cautious before giving more than 60 units in twelve hours. Few cases have required more than 100 units. The blood sugar percentage and the urine sugar, in addition to the clinical state of the patient, are the best guides in treatment. In some cases it may be safer to give 5 or 10 gm. of carbohydrate by mouth to offset the insulin, and some of the most successfully treated patients have received a few grams, from 15 to 30, of sodium bicarbonate. Promptness in beginning treatment is everything.

Insulin can be discontinued in a small fraction of cases. Those patients may be able to omit it who receive it temporarily because of an exacerbation caused by complications, and some patients whose diabetes is of recent onset, though perhaps the latter should receive it intermittently as a prophylactic against increasing severity. Many such instances in children are under observation.

To the Insulin Committee of Toronto, and through its recommendation to the Eli Lilly Company as well, I have been indebted for the rare privilege of using insulin. For this I cannot be grateful enough. The contribution of Banting and Best to the treatment of diabetes is greater than I ever expected to witness.[1]

81 Bay State Road.

TABLE 2.—*Foods Arranged According to Carbohydrate Content*

1–5%	3–5%	10%*	15%	20%
VEGETABLES (Fresh or Canned)				
Lettuce	Tomatoes	String beans	Green peas	Potatoes
Cucumbers	Brussels sprouts	Pumpkin	Artichokes	Shell beans
Spinach	Water cress	Turnip	Parsnip	Baked beans
Asparagus	Sea kale	Kohlrabi	Canned lima beans	Green corn
Rhubarb	Okra	Squash		Boiled rice
Endive	Cauliflower	Beets		Boiled macaroni
Marrow	Egg plant	Carrots		
Sorrel	Cabbage	Onions		
Sauerkraut	Radishes	Green peas, canned		
Beet greens	Leeks			
Dandelion greens	String beans, canned			
Swiss chard	Broccoli			
Celery	Artichokes, canned			
Mushrooms				
FRUITS:				
Ripe olive (30% fat)		Watermelon	Raspberries	Plums
Grape fruit		Strawberries	Currants	Bananas
		Lemons	Apricots	Prunes
		Cranberries	Pears	
		Peaches	Apples	
		Pineapple	Huckleberries	
		Blackberries	Blueberries	
		Gooseberries	Cherries	
		Oranges		

	30 Gm., 1 Oz., Contain Approximately			
	Carbohydrates, Gm.	Protein, Gm.	Fat, Gm.	Calories
Oatmeal, dry weight	20	5	2	118
Shredded wheat	23	3	0	104
Uneeda biscuits, two	10	1	1	53
Cream, 40%	1	1	12	116
Cream, 20%	1	1	6	62
Milk	1.5	1	1	19
Brazil nuts	2	5	20	208
Oysters, six	4	6	1	49
Meat (cooked, lean)	0	8	5	77
Chicken (cooked, lean)	0	8	3	59
Bacon	0	5	15	155
Cheese	0	8	11	131
Egg, one	0	6	6	78
Vegetables, 5% group	1	0.5	0	6
Vegetables, 10% group	2	0.5	0	10
Potato	6	1	0	28
Bread	18	3	0	84
Butter	0	0	25	225
Oil	0	0	30	270
Fish: cod, haddock (cooked)	0	6	0	24
Broth	0	0.7	0	3

* Reckon average carbohydrate in 5 per cent. vegetables as 3 per cent.; of 10 per cent. vegetables as 6 per cent.

TABLE 3.—*Results of Treatment*

SUMMARY OF 127 PATIENTS WITH DIABETES TREATED WITH INSULIN AND DISCHARGED TO THEIR HOME PHYSICIANS

Age at Onset, Years			Duration of Disease, Years		Treatment with Insulin		Gain in Weight	
No. of Cases	Aver.	Range	Aver.	Range	Duration, Days	Units Daily Aver.	Lbs.	%
127	29	1–65	4	0.3–20	107	11	4	5
INSULIN IN THE TREATMENT OF DIABETES IN CHILDREN 15 YEARS OF AGE OR UNDER								
31	7	1–15	2	0.3– 8	122	10	5	11
PATIENTS TAKING 6 OR LESS UNITS DAILY (CHILDREN UNDER 15)								
13	6	1–13	2	0.3– 4	89	4	3	8

SPECIFIC SERUM TREATMENT OF EPIDEMIC (LETHARGIC) ENCEPHALITIS

FURTHER RESULTS

EDWARD C. ROSENOW, M.D.

ROCHESTER, MINN.

By the use of special methods, a somewhat peculiar streptococcus has been isolated from infected tonsils, teeth and nasopharynx of patients suffering from various forms of encephalitis. With this streptococcus, typical symptoms and lesions of encephalitis have been reproduced in animals. The type of the disease induced experimentally often resembles that existing in the patient from whom the strain was isolated.[1] In the case of the strains from epidemic hiccup, a form of myoclonic encephalitis, it is possible to reproduce spasms of the diaphragm and other muscles not only with living cultures, but also with the filtrates of cultures and the dead bacteria.[2] The organism varies greatly in size and shape, depending on the method of cultivation. It has been cultivated from filtrates of nasopharyngeal washings, and from emulsions and filtrates of brain and medulla in fatal cases.[3] Large and small forms of the organism, sometimes in the same chain, have been demonstrated in the lesions in undoubted cases of encephalitis, and proved absent in adjacent normal tissues, and in the brains of persons who have died from other causes.[4]

In view of these and other facts, may it not be possible that the organism with which I am working is the larger aerobic antigenic form of the smaller anaerobic, relatively nonantigenic form isolated by Loewe and

1. A summary of the work of the Toronto group on insulin appeared in the Journal of Metabolic Research **2**: 125 (Aug.) 1922. An early article by Banting and Best appeared in the Journal of Laboratory and Clinical Medicine **7**: 251, 1922. A more recent clinical article by Banting, Campbell and Fletcher appeared in the British Medical Journal **1**: 8 (Jan. 6) 1923.

1. Rosenow, E. C.: The Production of Spasms of the Diaphragm in Animals with a Streptococcus from Epidemic Hiccup, J. Infect. Dis. **32**: 41-71 (Jan.) 1923; Experimental Studies on the Etiology of Encephalitis: Report of Findings in One Case, J. A. M. A. **79**: 443-448 (Aug. 5) 1922.

2. Rosenow, E. C.: Production of Spasms of the Diaphragm in Animals by Living Cultures, Filtrates, and the Dead Streptococcus from Epidemic Hiccup, J. Infect. Dis. **32**: 72-94 (Jan.) 1923.

3. Rosenow, E. C. (Footnote 1, second reference).

4. Rosenow, E. C., and Jackson, G. H., Jr.: Microscopic Demonstration of Bacteria in the Lesions of Epidemic (Lethargic) Encephalitis, J. Infect. Dis. **32**: 144-152 (Feb.) 1923.

Strauss,[5] Thalhimer,[6] and Maggiore and Sindoni,[7] and considered by them as the causative agent in encephalitis? In a series of immunologic and other experiments, to be reported shortly, it has been found that, while the various strains are of low virulence, they nevertheless have decided antigenic power. With the dead bacteria, rabbits have been successfully immunized against encephalitis, following the injection of homologous and certain heterogeneous strains. Agglutination and agglutinin absorption tests with convalescent human and hyperimmune horse serum show that most of the strains isolated are immunologically identical, and closely related to the pleomorphic streptococcus which I have isolated in poliomyelitis.

On the basis of these findings, methods of treatment by active immunization are being tested in the hope that benefit may be derived in the more chronic forms of the disease, and that recurrences and late manifestations, the so-called sequelae, may be prevented. The serum from rabbits and horses immunized by repeated injections of increasing doses of this streptococcus has been found to protect rabbits and mice against properly gaged doses of homologous, and immunologically similar, heterologous strains.

The results from the use of one lot of immune horse serum in the treatment of a few cases of encephalitis were encouraging,[8] but for some unknown reason, this serum became toxic and hence unsuited for use. Other lots of immune horse serum have been prepared since. The details of the method of immunization will be published elsewhere. Suffice to state here that the particular lot of serum used in the cases here reported was a mixture of the serum from two horses injected with four strains. One of these strains was isolated from the throat of a patient with lethargic encephalitis, one from the spinal fluid of a patient with encephalitis and marked involvement of the meninges, one from the throat of a patient having encephalitis with hiccup, and one from the medulla in a rapidly fatal case.

After it had been demonstrated that the serum contained antibodies, and that it had protective power in animals, its therapeutic effects were studied on patients in the neurologic service of the Mayo Clinic, and studies were made by physicians to whom the serum had been sent on request.

METHOD OF INJECTION

In determining the method of injection, I was guided by the results obtained in animals, and in the treatment of poliomyelitis with a similarly prepared serum, in which intravenous and intramuscular injections have given the best results. Owing to the somewhat toxic effect of horse serum when injected intraspinally, to the slight evidence of involvement of meninges in encephalitis, and to the fact that the streptococcus is rarely demonstrable in the spinal fluid in these cases, we used, at first, intravenous or intramuscular injections exclusively. Later, the results of intraspinal injections, after the withdrawal of at least an equivalent amount of spinal fluid, were also studied. The cell count in the spinal fluid the day after intraspinal injection of the serum was usually somewhat lower in cases in which the initial count was relatively high, and unchanged or somewhat higher in cases in which the initial count was exceptionally low (Case 5). With few exceptions, the effect on the symptoms was not perceptibly better than that following intravenous or intramuscular injection of the same or larger doses.

After a study of my own results, and those of other physicians, the most effective dose and interval between injections are still uncertain. However, the following procedure is tentatively recommended: An intradermal sensitization test should be made in all cases. If the patient is hypersensitive, desensitization should be practiced by injecting subcutaneously several small, but increasing doses, beginning with 0.5 c.c., and repeating the injection two or three times in twenty-four hours. Unless the condition is critical, whether or not the patient is sensitive, the first therapeutic injection, from 10 to 20 c.c., should be given intramuscularly, and preferably soon after the withdrawal of spinal fluid. The subsequent injections are to be of from 20 to 40 c.c., intravenous, intraspinal or intramuscular, given at intervals of from twelve to twenty-four hours, provided no reaction develops following the first injection. It is believed best to give intraspinal injections to patients with relatively high cell counts. If apparently good effects are obtained, the injections may be continued for from five to eight days, at which time hypersensitiveness to horse serum may develop, making further injections impossible, or forcing a reduction in dosage. In general, if no good effects have been noted after three or four injections, the serum treatment should be discontinued. If good results have been obtained following a series of injections, and the patient has had a relapse, the injections should be resumed, but with caution. Increasing doses, repeated two or three times the first day, should be given subcutaneously, beginning with 0.5 c.c., and all therapeutic injections should be administered intramuscularly.

RESULTS

The effect on the temperature has been variable. There was usually no change in temperature if it was normal at the time of the injection. If the patients were febrile, there was often moderate rise in the temperature for from six to twelve hours, when it returned to the former level, if no other beneficial effects were noted. If good effects were noted in other respects, the temperature usually dropped to a lower level with each subsequent injection, and reached normal after from two to five daily injections. Usually slight fever, sometimes a sharp rise, occurred during the serum sickness, which nearly always developed in from six to twelve days after the first injection. Beneficial effects were manifested in various ways, depending on the type of the disease. Lethargic patients became more wakeful (Cases 3, 6, 7, 8, 9, 10 and 11); semicomatose patients became conscious (Case 1); highly excited, restless (Cases 2, 13 and 15), delirious (Case 16), and in a few instances maniacal patients became more quiet and rational (Case 19); choreiform movements (Cases 2, 14 and 15) and myoclonic contractions (Cases 2, 10, 11, 12 and 13) became less marked and less frequent. The tremors, rigidity and masked expression in certain parkinsonian cases diminished (Cases 20, 21 and 22). Weakness of muscles was slower to respond in cases in which there were other manifestations, and in those in which there were various cranial nerve palsies, unassociated with other symptoms (Cases 17 and 18).

5. Loewe, L., and Strauss, I.: Studies in Epidemic (Lethargic) Encephalitis: Cultural Studies, J. Infect. Dis. **27**: 250-269 (Sept.) 1920.
6. Thalhimer, W.: Epidemic (Lethargic) Encephalitis: Cultural and Experimental Studies: Second Communication, Arch. Neurol. & Psychiat. **8**: 286-298 (Sept.) 1922.
7. Maggiore, S., and Sindoni, M.: Etiologia dell'Encefalite Epidemica, Pediatria **28**: 985-991, 1920.
8. Helmholz, H. F., and Rosenow, E. C.: Three Cases of Acute Encephalitis Treated with Specific Serum, J. A. M. A. **79**: 2068-2071 (Dec. 16) 1922.

The effects in 130 patients have thus far been studied. These were divided into two groups, according to whether or not apparently beneficial effects were noted during, or soon after, the injections of the serum, irrespective of duration or type of the disease and the amount of serum given. Of these 130 patients, eighty-five (65 per cent.) improved; forty-three showed no appreciable change (Cases 4 and 5); while in two acute cases, it was the opinion of the attending physicians that the symptoms were aggravated following the injection of the serum.

In the group of patients who improved, three died after temporary benefit, a mortality of 3.6 per cent. One of these, a myoclonic, wildly delirious patient, died of respiratory paralysis six days after receiving 56 c.c. of serum. One other myoclonic and delirious patient died four days after the sixth intravenous injection, receiving altogether 109 c.c. of serum. One, an extremely delirious patient, died ten days after two injections of serum, 35 c.c. in all.

The duration of the disease at the time of serum treatment in the group of patients who derived apparent benefit could be determined in seventy-one cases; it ranged from two days to three years. In twenty-three cases, it was seven days or less; in twenty-one, it was between eight and fifteen days; in thirteen, between sixteen and thirty days; in two each, it was one, two, three, four and twenty-four months; in one each, it was six, ten, fourteen and thirty-six months, respectively. The predominating type of the disease was reported in eighty cases in this group. Of these, thirty-four were predominantly lethargic, nineteen myoclonic, six choreiform, five parkinsonian, and sixteen neuritic, paralytic, acute or bulbar in type. The ages of the patients ranged from 1 year to 65 years. Forty-seven were males, and thirty-five females. In three, the sex was not recorded. In five patients, the improvement was slight; in thirty-eight, moderate, and in forty-two, marked.

In the group of forty-five patients in whom no beneficial effects were noted, nineteen died. These, together with the three who died in the favorable group, make a mortality rate of 17 per cent. Most of the fatal cases were acute and very severe forms of the disease, and in many, inadequate amounts of the serum were given; thus, twelve patients received less than 30 c.c.; five received between 30 and 50 c.c., and only five received from 90 to 120 c.c. The duration of the disease in the nonfavorable group at the time of the first serum treatment was determined in all but four cases, and ranged from four days to three years; in eleven cases, it was a week or less; in nine, between eight and fifteen days; in eleven, between sixteen and thirty days; in one each it was one and one-half, twelve, and twenty-four months; in three, it was two months; and in three, it was three years. On analyzing the results according to whether or not an adequate amount of serum was given, it was found that of the 130 patients, only eighty-five received 50 c.c. or more of the serum, and of these, eight died, a mortality of 9.4 per cent. No apparent effects followed the use of the serum in five additional cases, which later proved to be tuberculous meningitis, and in two cases of brain tumor.

The time when improvement began varied considerably, depending on the duration and severity of the disease, and the amount of serum injected. As a rule, improvement occurred within twenty-four hours after each injection, but in some instances, especially in the chronic forms of the disease, it did not occur until after recovery from the delayed serum reaction. In most cases in which improvement was apparently initiated by the serum treatment, it continued thereafter; in a considerable number, the gain was temporary, and the patient reverted to the former condition; in a few instances, a second series of injections (Cases 2 and 11), after desensitization, again produced beneficial effects. Improvement occurred in patients who had been in the same condition for weeks, and in some who were slowly growing worse; and, seemingly, recovery was hastened in some that were slowly improving. In some cases no good effects were noted, regardless of the duration or severity of the symptoms, and in no instance did the serum stay the process in fulminating bulbar types of the disease.

The reasons for lack of improvement in acute fulminating cases are obvious. The antibody content in the amount of material injected is necessarily small; in cases of long duration, anatomic changes may have taken place, precluding the possibility of benefit. In the milder forms of the disease, of relatively short duration, however, the reasons for the ineffectiveness of the serum are not so apparent. In several cases in my series, marked sepsis of the teeth and tonsils may have been responsible. In others, the explanation may be found in the fact that, as I have already pointed out, not all of the strains are immunologically identical. Indeed, it was found with one exception, a moribund patient, that in the cases in which benefit was derived, the organism isolated, with which encephalitis was produced in animals, was markedly agglutinated by the immune serum injected; and that in cases in which doubtful or no results were obtained, the organism isolated was agglutinated not at all, or only in low dilutions of the serum. In a number of cases in which improvement was noted, the agglutinating titer of the patient's serum against encephalitis strains showed, twenty-four hours after the serum was given, a sharper increase than could be accounted for by the amount of serum injected. It is possible, therefore, that some of the good effects are nonspecific in character.[9]

The beneficial effects obtained in certain chronic cases (Cases 21 and 22) are in keeping with the fact that the causative organism has been isolated from the nasopharynx and infected tonsils or teeth long after the onset of the disease.

Good effects have been noted in different types of the disease, in widely separated communities, and in cases that occurred during epidemic outbreaks of the disease, and in sporadic cases.

The results obtained thus far are encouraging and about what should be expected, in view of the results of protective and other experiments in animals, at the same time leaving much to be accomplished.

It is, of course, doubtful whether the serum treatment will prevent in all cases the late manifestations which are so common and so deplorable. The delayed serum reaction, which occurred in from four to twelve days after the first injection in most cases, makes the continued use of the serum impossible, and sometimes dangerous, even when the usual precautions are taken. My experimental studies indicate that the progressive and changing character of the disease, the exacerbations and the so-called sequelae, are due to an active infection by a streptococcus, which has peculiar neurotropic and other properties, and that invasion may be

9. Russell, C. K.: Epidemic Encephalitis: Influence of Horse Serum in Treatment: A Preliminary Note, Canadian M. A. J. **12**: 705-710 (Oct.) 1922.

favored by the presence of primary foci of infection, such as in sinuses, teeth and tonsils. Hence, besides the serum and other forms of treatment, a thorough search for, and when possible, removal of, foci of infection, combined perhaps with active immunization with a vaccine prepared from the streptococcus proved guilty by animal inoculation, should be practiced in the hope of arresting the progress and preventing recurrences in this disease.[10]

In order to make clear the results obtained with the serum in various forms of the disease, I shall cite the essential facts in a series of illustrative cases in which seemingly undoubted benefit was derived, and in which doubtful or no results were obtained.

REPORT OF CASES

CASE 1.—A farmer, aged 26, a patient of Dr. J. H. Stokes, six months prior to the attack of encephalitis, had received a series of six intravenous injections of arsphenamin for hereditary syphilis. He was free from symptoms, and the blood and spinal fluid Wassermann reactions were negative, but a second series of injections was thought advisable, and he returned to the clinic.

Feb. 6, 1923, four days after the fifth injection of arsphenamin, all without untoward symptoms, during an epidemic of respiratory infection resembling influenza, in which a number of cases of encephalitis developed, the patient complained of pain in the extremities, and developed symptoms of a moderately severe nasopharyngitis. He felt sick for three days, but the symptoms were attributed to the respiratory infection. The night of February 11, he was restless, tossed about a great deal, and was unable to sleep. The next day he felt worse, continued to be restless, but became listless, and experienced difficulty in walking and talking. On the morning of February 13, he was taken to the hospital in a semistuporous condition. He complained of headache and dizziness, moaned a great deal, was stuporous most of the time, but restless, and pulled almost constantly at the sheets. Examination revealed double vision, incoherent speech, slow and tremulous movements, marked rigidity of extremities, and incontinence of urine and feces. February 14, his condition was much the same. He was extremely rigid; there were ankle clonus, a positive Babinski, and marked increase in knee reflexes. During short intervals, he seemed oriented, but was stuporous most of the time. Twenty cubic centimeters of antiencephalitis serum was given intravenously at 10 p. m. The next morning the patient was remarkably improved. He was easily aroused and answered questions intelligently, although at intervals he lapsed into apparent unconsciousness. The extremities were less rigid, and the reflexes less exaggerated. From 40 to 50 c.c. of clear spinal fluid was withdrawn, and 20 c.c. of serum was given intraspinally. Daily injections of 20 c.c. of the serum, alternating intravenously and intraspinally, were given during the next five days. Improvement continued uninterruptedly, and apparently complete recovery followed.

CASE 2.—A boy, aged 9 years, a patient of Dr. G. T. Joyce, Rochester, Minn., March 7, without previous respiratory infection, became apathetic, complained of double vision and inability to sleep, and developed muscular twitchings and jerky movements, beginning in the left arm, and extending to the left leg, and then throughout most of the body. His temperature ranged from 100 to 101 F. until March 12. My examination, on the evening of March 12, revealed diplopia, slight drooping of the eyelids, restlessness, twitching of the muscles of the left eyelids and left side of the face, and peculiar jerky movements of all extremities, resembling those of chorea, exaggerated knee jerks, and a temperature of 101 F. The spinal fluid was under normal pressure; the cell count was 28; the globulin test was positive. An intradermal sensitization test was positive. Five-tenths cubic centimeter of serum was given subcutaneously as a desensitizing dose. There was no change in the boy's condition the following day. Five cubic centimeters of serum was given intramuscularly in the morning, and 10 c.c. in the evening. The boy slept quietly most of the night, and the next day marked improvement was noted. The temperature was normal, and the twitchings and jerky movements of muscles were much less marked. Two injections of serum of 10 c.c. each were given that day, and one injection on each of the two succeeding days. Improvement continued, and on the fourth day after the serum treatment was begun, all symptoms had subsided, and the boy appeared well. One more injection was given, and in twenty-four hours serum rash appeared, and the injections were discontinued. There were no symptoms for eighteen days, when twitching of muscles of the left eyelids, diplopia in looking toward the left at objects at some distance, jerky movements of the left arm, and slight fever recurred. Desensitization was again carried out, and three daily intramuscular injections of serum were given, when they had to be discontinued on account of a severe attack of serum sickness. The twitchings and jerky movements again disappeared, and three weeks later recovery was complete, except for slight diplopia.

The streptococcus isolated from the nasopharynx produced a myoclonic type of encephalitis in rabbits, and was agglutinated specifically by the immune horse serum, by the patient's serum, and by the serum from several other cases of encephalitis.

In order to avert further recurrence and sequelae, a vaccine was prepared from the patient's own strain of the streptococcus, and is being administered once a week.

CASE 3.—A farmer, aged 30, seen with Dr. A. E. Lange of the Mayo Clinic, had a cold in the head, which was followed a few days later by buzzing in both ears, nausea and vomiting, and about ten days later, by blurred vision, nystagmus, diplopia and lethargy. A diagnosis of lethargic encephalitis was made. Serum treatment was begun three weeks after the onset of the illness. Five daily injections were given, 90 c.c. in all. The patient was decidedly more wakeful the day after the first injection, and was able to read. Following this, there were fluctuations from day to day in the degree of nystagmus, ability to read and lethargy, but gradual improvement occurred, and two months later recovery was apparently complete, except for slight strabismus and blurred vision.

CASE 4.—A man, aged 54, a section foreman, seen with Dr. A. E. Lange of the Mayo Clinic, had, four weeks before, developed aching pain in, and stiffness, hot feeling and sensitiveness of the right thigh, followed in four days by severe cramping and involuntary contractions of muscles on that side. Shortly afterward, he developed a similar condition of the left thigh, and became delirious and bewildered. The myoclonic movements extended to the lower abdominal muscles, and occurred in rhythmic alternation on both sides. These movements were still present on examination, but were not nearly so marked as during the first week or two. A diagnosis of myoclonic encephalitis was made. The temperature was normal; the leukocyte count was 15,400; the Kolmer test of the spinal fluid was negative, the Nonne, positive, and the sugar content slightly increased. Five daily intravenous injections of the serum, 101 c.c. in all, were given. Slight improvement occurred after the second dose, and during three weeks in which the patient was under observation, there was a gradual improvement in muscular movements and mental condition. However, it is doubtful whether the serum was of any benefit.

CASE 5.—A man, aged 23, a cook, seen with Dr. A. E. Lange of the Mayo Clinic, had had influenza four weeks previously, and was sick for two weeks. He had had fever, was in bed for several days, and then apparently recovered. Two weeks later he suddenly developed severe frontal headache, blurring of vision, and in twenty-four hours diplopia, nystagmus, staggering gait, fever, restlessness, extremely irregular sighing respirations, marked edema of the lips, and bulging of the eyeballs. The leukocyte count was 13,600. Spinal fluid findings were: 1 lymphocyte, a negative Kolmer test, a positive Nonne, and 0.15 per cent. (Folin) sugar. One

10. Since this paper was written, forty additional cases that were treated with the serum have been studied. Favorable results were obtained in twenty-five cases, in nearly all of which the serum was given in the early stages of the disease; doubtful, or no apparent effects were obtained in fifteen cases, chiefly chronic or fulminating types of the disease.

intraspinal and one intravenous injection of serum, 20 c.c. each, had no apparent effect. Twenty-four hours after the intraspinal injection of serum, there were 60 lymphocytes in the spinal fluid. The patient died of respiratory paralysis forty-eight hours after the onset of symptoms of encephalitis.

The streptococcus isolated from rabbits that developed the bulbar type of encephalitis following injection of the nasopharyngeal washings, from filtrates of the nasopharyngeal washings and emulsions of the medulla, and corresponding filtrates, was not agglutinated by immune horse serum, but was agglutinated by the patient's serum and by the serum from one other case of the bulbar type of the disease.

CASE 6.—A man, aged 27, had had pain over the right eye, diplopia, insomnia for two days, ringing in the ears, nausea, retention of urine, chills and sweats, abnormal but variable reflexes, palsy of the face and right quadriceps, and drowsiness. The leukocyte count was 10,000. The spinal fluid cell count was 18, and globulin was increased. The Wassermann reaction was negative. A diagnosis of lethargic encephalitis was made. Serum treatment was begun on the fifth day of illness; three daily intramuscular injections were given, 70 c.c. in all. The diplopia, drowsiness, and retention of urine disappeared within twenty-four hours after the first intramuscular injection of serum. Complete recovery followed, with the exception of a positive Babinski sign on the right.[11]

CASE 7.—A woman, aged 32, had pain in the back of the head, and dizziness, diplopia, blurred vision, photophobia, restlessness, delirium, stupor, dysphagia and moderate intermittent fever. The spinal fluid was normal. A diagnosis of lethargic encephalitis was made. Serum treatment was begun on the seventh day of the illness; three daily intravenous injections were given, 67 c.c. in all. The restlessness, pain, and headache were greatly relieved, and gradual recovery followed.[12]

CASE 8.—A girl, aged 12 years, had headache, delirium, fever and inequality of pupils, followed by diplopia, apathy and somnolence. The spinal fluid cell count was 10. The Wassermann reaction was negative. Lethargic encephalitis was diagnosed. Serum treatment was begun on the fourteenth day of illness; five daily intramuscular injections were given, 47 c.c. in all. Improvement in the mental state began the day following the first injection, and was progressive. Complete recovery followed.[13]

CASE 9.—A man, aged 35, had recurring attacks of lethargic encephalitis three years, nine months and three weeks prior to the administration of serum. Lethargic encephalitis was diagnosed. On the twenty-first day of the last attack, serum treatment was begun; three daily intravenous injections, followed by three daily intraspinal injections, were given, totaling 60 c.c. The lethargy almost completely disappeared, but divergent strabismus persisted.[14]

CASE 10.—A girl, aged 18 years, had had high fever, headache, nystagmus, myoclonic twitchings of the face, neck, abdomen, arms and legs, and dysphagia, lethargy, muscular rigidity, ankle clonus, Babinski on the right side, and incontinence of urine. A diagnosis of lethargic and myoclonic encephalitis was made. Serum treatment was begun on the fifth day of illness; four daily intramuscular injections were given, totaling 90 c.c. The muscular rigidity and jerkings diminished, the mental state greatly improved the day after the second injection, and improvement thereafter was gradual but steady. The patient recovered completely.[15]

CASE 11.—A boy, aged 12½ years, had had muscular pains in the shoulders, arms and legs, and a temperature of 100 to 101 F. for a week. He then developed hiccup every two to six minutes; drowsiness increased, and twitchings of the muscles of the legs were noted, with involuntary clonus of the left ankle, synchronous with spasms of the diaphragm, generalized clonic convulsions at intervals, and intermittent diplopia. The leukocyte count was 7,600. The blood and spinal fluid Wassermann reactions were negative. The urine was normal. The abdominal and cremasteric reflexes were greatly increased. A diagnosis was made of lethargic and myoclonic encephalitis. Serum treatment was begun on the twelfth day of illness; four daily intravenous injections were given, totaling 40 c.c. The spasms of the diaphragm and other muscles, and lethargy disappeared completely during the serum treatment. Muscular twitchings of the left shoulder, which returned five days after the last injection, disappeared within twenty-four hours after an additional injection of 10 c.c. of serum. The patient recovered completely.[16]

CASE 12.—A woman, aged 22, had an initial attack of influenza. She had a moderate degree of fever, increasing slowness of speech, severe muscular pains the sixth day, increasing rigidity and lethargy, and unconsciousness on the eighth day, which continued until the eleventh day, when the first intramuscular injection of serum was given. Diagnosis of lethargic and myoclonic encephalitis was made. Seventy-one cubic centimeters was given in four daily doses. Decided but gradual decrease of all symptoms followed the second intramuscular injection of serum. The patient was troubled with insomnia during convalescence, but recovered completely.[17]

CASE 13.—A woman, aged 68, was sleepless and restless, and had painful clonic spasms of the abdominal muscles and the diaphragm on the right side. The spinal fluid cell count was 12; the Wassermann reaction was negative, and pressure greatly increased. A diagnosis of myoclonic encephalitis was made. Serum treatment was begun on the ninth day of illness; five injections were given, totaling 98 c.c. The symptoms diminished after each of five serum treatments, in which 10 c.c. was given intravenously, and 10 c.c. intraspinally from twenty-four to forty-eight hours apart. The patient recovered completely shortly after the last serum treatment.[18]

CASE 14.—A girl, aged 12½ years, developed uncontrollable movements of the feet and arms, and the muscles of the trunk, which increased to violent choreiform movements involving the whole body. She was aphasic, and semicomatose, with the eyes half opened. Her fever was high, and she was stuporous following an attack of cystitis and parotitis. Athetosis was marked; she made bizarre grimaces. The patellar reflexes disappeared. Loss of weight was marked. The blood and spinal fluid Wassermann reactions were negative. The cell count ranged from 2 to 40; the globulin was slightly increased. A diagnosis of the lethargic and choreiform type of encephalitis was made. Serum treatment was begun on the ninety-fifth day of illness; five daily intravenous injections were given, 50 c.c. in all. The fever gradually declined during the four days following the first injection; the mental status remained unchanged; the muscular spasms diminished slightly. The patient gradually improved thereafter, with ultimate complete recovery.[19]

CASE 15.—A man, aged 28, had had hiccup for three days, and a week later, severe pain around the left ear and left side of the face, with involuntary movements of the muscles of the face, arms and lower extremities. He had severe headache, insomnia, diplopia and fever, and was excited and talkative. The leukocyte count was 6,800. A diagnosis of the choreiform type of encephalitis was made. Serum treatment was begun on the sixteenth day of the illness; four intramuscular injections were given, 70 c.c. in all. Fever, diplopia, choreiform movements, insomnia and pains were markedly lessened during the period of serum injections. The patient recovered completely.[20]

CASE 16.—A man, aged 38, had fever, pain in the head, neck and shoulders, vertigo, and twitchings of muscles, followed by choreiform movements of the hands and arms, hiccup, associated with short, quick respirations, tachycardia and delirium, and was stuporous. The spinal fluid was normal, but the pressure was increased. A diagnosis of the neuritic and myoclonic type of encephalitis was made. Serum treatment was begun on the thirtieth day of the illness; three daily intravenous injections were given, the total being 67 c.c.

11. Case reported by Dr. F. W. Heagey, Omaha.
12. Case reported by Dr. Kenelm Winslow, Seattle.
13. Case reported by Dr. Maurice H. Tallman, Boise, Idaho, and Dr. W. M. Mitchell, Parma, Idaho.
14. Case reported by Dr. W. L. Allison, Fort Worth, Texas.
15. Case reported by Dr. A. E. Westervelt, Bowdon, N. D.
16. Case reported by Dr. M. R. Hoon, Pittsburgh.
17. Case reported by Dr. D. W. Matthaei, Fessenden, N. D.
18. Case reported by Dr. D. L. Dawson, Rice Lake, Wis.
19. Case reported by Dr. F. J. Sladen, Henry Ford Hospital, Detroit.
20. Case reported by Dr. M. M. Banowitch, Beth Moses Hospital, Brooklyn.

There was marked improvement twenty-four hours after the first injection of serum. The patient recovered completely.[21]

CASE 17.—A woman, aged 35, had vertigo, prostrating weakness, and paralysis of the sixth and seventh cranial nerves on the left side, but no fever. The leukocyte count was 9,600. The blood Wassermann reaction and spinal fluid findings were negative. A diagnosis of neuritic encephalitis was made. Serum treatment was begun on the eleventh day of the illness; six daily injections were given, 80 c.c. in all. Two days after the sixth dose of serum, symptoms of paralysis of the cranial nerves had almost disappeared, only slight widening of the palpebral fissure remaining.[22]

CASE 18.—Mrs. C., aged 28, had an attack of encephalitis in which she developed incomplete facial paralysis, and complete inability to cough, evidently from paralysis of the diaphragm. She was given three daily intravenous injections of 10 c.c. of the serum five weeks after the onset of the illness. Marked improvement was noted after the use of the serum, and after the serum reaction, which occurred the day following the third injection. Twelve days later, the facial palsy had disappeared; she was again able to cough, and had apparently recovered completely.[23]

CASE 19.—A woman, aged 30, had moderate fever, headache and restlessness. An abnormal mental state was followed by acute mania. The patient refused food and medicine, and would alternately strike, bite and scratch the nurses, and sing. Urination and defecation were involuntary. The spinal fluid cell count was 1, and Fehling's test was positive. A diagnosis of encephalitis, with maniacal symptoms, was made. After withdrawal of spinal fluid, which was under pressure, the patient became quieter, but continued to be irrational, and refused food and medicine for a week. On the eleventh day of illness, 1 c.c. of serum was given subcutaneously, and a short time later, 10 c.c. intravenously. The following day there was marked improvement. After two more daily intravenous injections of 15 c.c. each, the patient was quite normal, asked for a daily paper, which she read, and wanted to go home. Three days later, she reverted to her former condition, refused to take nourishment, or to speak, and kept her head covered. Ten cubic centimeters of serum was given intravenously. The following morning she was normal again, and remained so.[24]

CASE 20.—A man, aged 26, had diplopia, severe pain in both shoulders, lassitude, and fever for five days, followed by increasing lethargy and stupor, a staring, masked expression, and muttering speech. The spinal fluid was normal. A diagnosis of the lethargic and parkinsonian type of encephalitis was made. Serum treatment was begun on the fifteenth day of the illness; six daily injections were given, totaling 70 c.c. Lessening of fever, pain, stupor and the parkinsonian facies followed the first injection, and improvement continued after subsequent injections. Recovery was complete.[25]

CASE 21.—A woman, aged 39, was weak, completely disabled, and mentally apathetic, and all movements were slow and difficult, with marked muscular resistance and tremor of the hands. She was unable to feed herself, and had marked drooling of saliva. The condition had developed gradually for three years, following an obscure infection considered to be walking typhoid. Blood Wassermann and spinal fluid reactions were negative, and the urine was normal. A diagnosis of postinfluenzal encephalitis, of the parkinsonian type, was made. Serum treatment was instituted, 10, 20 and 20 c.c., respectively, of serum being injected intravenously on alternate days. No effect was apparent until after the last injection, when rash, slight swelling of joints, and elevation of temperature developed, lasting forty-eight hours. When these symptoms subsided, gradual but well-marked improvement followed. The mental attitude improved; muscular resistance and drooling of saliva gradually decreased; the patient became much encouraged, was able to feed herself and walk about the hospital wards, and carried her grip as she left the hospital, apparently recovered.[26]

21. Case reported by Dr. Kenelm Winslow, Seattle.
22. Case reported by Dr. C. S. Bluemel, Denver.
23. Case reported by Dr. William House, Portland, Ore.
24. Case reported by Dr. B. H. Champion, Vancouver, B. C.
25. Case reported by Dr. T. B. Kelly, Butte, Mont.
26. Case reported by Dr. G. W. Dishong, neurologic service, St. Joseph's Hospital, Omaha.

CASE 22.—A man, aged 35, after an attack of influenza had had lethargic encephalitis, lasting several weeks, and had been unable to work the past year on account of weakness, stiffness and tremor of muscles, and mental depression. Examination revealed stiffness and weakness of all muscles, "pill-rolling" movements between thumb and index finger of the right hand, and a slow, laborious gait with stooping posture. The patient's condition remained unchanged for two months while he was in the hospital. The blood and spinal fluid Wassermann reactions were negative. A diagnosis of parkinsonian syndrome following lethargic encephalitis was made. Serum treatment was begun fourteen months after the onset of the disease, 10, 20 and 25 c.c. of serum being injected intravenously on alternate days. Severe serum reaction followed soon after the third injection, but marked improvement began simultaneously with recovery from the serum sickness. The weakness and stiffness of muscles, the tremor in the right hand, and the facial mask have practically disappeared, and improvement has been continuous for two months.[27]

THE VALUE OF THE TOXIN (ANTIGEN) OF RHUS TOXICODENDRON AND RHUS VENENATA

IN THE TREATMENT AND DESENSITIZATION OF PATIENTS WITH DERMATITIS VENENATA

ALBERT STRICKLER, M.D.
Dermatologist, Samaritan Hospital; Assistant Dermatologist, Philadelphia General Hospital
PHILADELPHIA

In this contribution I present a statistical discussion of two problems. The first is a study of the relative value of the antigen method of treating dermatitis venenata due to poison ivy or poison oak, as compared with the older methods of local applications. The second phase of the discussion is whether or not this specific toxin (antigen) treatment is of value in the prevention of attacks of dermatitis venenata in those who are highly susceptible to it. The data represent the accumulated experiences, not only of myself, but of many other physicians throughout the country who have utilized this method of treatment.

TREATMENT OF THE ATTACK OF DERMATITIS VENENATA

The attack of dermatitis venenata represents a state of hypersensibility on the part of the person affected to this particular form of irritant. The old method of local application utilized remedies, in the treatment of dermatitis venenata due to poison ivy or poison oak, which were either slightly astringent and itch relieving, or medicinal substances which were, in themselves, irritants. The first group of remedies, by their cooling and soothing influences, attempted in this fashion to quiet the inflammatory reaction of the skin, diminish its subjective and objective cutaneous manifestations, and thus limit the spread of this form of dermatitis. The second group of remedies, those applied in the nature of counterirritants, attempted to overcome this specific cutaneous inflammation by increasing the amount of defensive substances sent to the inflamed skin, and thus conquer the inflammation and control it spread. This method, owing to the possibilities for harm, has never enjoyed great popularity among the profession. The great weakness of this mode of treatment is the attempt to overcome a specific reactionary inflammation with nonspecific remedies. It has

27. Case reported by Dr. G. W. Dishong, neurologic service, St. Joseph's Hospital, Omaha.

occurred to us that the employment of the active principles derived from the plants, capable of producing a dermatitis venenata in the susceptible subjects, represented the rational therapeutic method of procedure.

TABLE 1.—*Patients Suffering from Dermatitis Venenata Due to Poison Ivy and Poison Oak Treated by the Toxin (Antigen) Method of Treatment*

Physician	No. of Patients Treated	Successful Results	Doubtful Results	Unsuccessful Results	No. of Hours after First Injection Before Results Were Noted	No. of Injections to Complete Cure	Average No. of Injections Given to Each Patient
1. Dr. M.	7	7	..	..	24 to 48	2 to 3	2 to 3
2. Dr. F.	16	16	..	..	3 to 24	2 to 4	3
3. Dr. A.	2	2	..	..	48	3	3
4. Dr. B.	1	1	..	..	.....	3	3
5. Dr. E.	4	4	..	..	48	3	3
6. Dr. H.	8	7	1	..	24 to 36	2 to 3	3
7. Dr. H.	4	4	..	..	6 to 24	2 to 4	2 to 4
8. Dr. H.	4	4	..	..	48	3	3
9. Dr. L.	6	6	..	..	24 to 48	4	4
10. Dr. M.*	20	15	3	2	24	3 to 4	4
11. Dr. P.	2	1	1	..	24	2	2 to 3
12. Dr. R.	1	1	..	..	24	3	3
13. Dr. S.	2	2	..	..	24	3	3
14. Dr. S.	1	1	..	..	4	2	2
15. Dr. S.	1	1	..	..	24	2	2
16. Dr. S.	1	1	..	..	..	6	6
17. Dr. T.	1	1	..	..	48	3	3
18. Dr. T.	1	1	..	..	2	3	3
19. Dr. W.	9	9	..	..	24	2 to 3	2
20. Dr. J.	8	8	..	..	2	2 to 5	2 to 3
21. Dr. L.	2	2	..	..	..	1 to 3	1 to 3
22. Dr. S.	24	24	..	..	24	3 to 4	3
23. Dr. B.	2	2	..	..	12 to 24	3	3
24. Col. K.†	17	17	..	..	24 to 48	1 to 2	1
25. Dr. F.	6	3	3	..	.....	.....	.....
26. Dr. D.	4	..	..	4	No results	.....	.....
27. Dr. E.	1	1	..	..	.....	.....	.....
28. Dr. B.	1	..	1	..	.....	.....	.....
29. Dr. M.	2	2	..	..	48	2	2
30. Dr. Q.	6	6	..	..	48	2	2
31. Dr. R.	2	2	..	..	4th day	5	5
32. Dr. B.	6	6	..	..	24	1 to 2	2
33. Capt. P (Oak)	50	50	..	..	24 to 48	2 to 3	2
34. Dr. A. (Oak)	34	34	..	..	24 to 48	1 to 3	2
35. Dr. S. (Author)	100	96	..	4	24 to 48	2 to 4	3

* University of Wisconsin.
† West Point Military Academy.

The most authoritive work shows that the active principle of poison ivy or oak is a substance of glucosidal nature. This substance is nonvolatile even when mixed with acetic acid and alcohol. The method of isolating the substance has already been discussed.[1]

The toxin (antigen) treatment of dematitis venenata, caused by poison ivy, which is the most common type in the eastern United States, consists in the intramuscular injection of a solution of this specific antigen. The author's technic consists in giving a series of from three to five injections, the number administered varying with the severity of the attack and the response on the part of the patient. The dose of the present preparation varies from 0.3 to 0.5 c.c., although doses up to 0.7 c.c. may be given.

The first two doses are given at a twenty-four hour interval, the remainder at intervals of from forty-eight to seventy-two hours, depending on the response of the patient. As a rule, to which there are few exceptions, the itching associated with this form of dermatitis disappears completely, or is greatly modified, within twenty-four hours after the first injection.

With the relief of the itching, the swelling and redness of the parts affected begin to disappear, and vesicles present begin to dry up and form crusts, which soon fall off. The skin is usually restored to normal in from four to five days after treatment is instituted, except in those generalized and violent cases of dermatitis venenata in which the restoration of the skin to normal may be more delayed. These results are accomplished without the aid of any external remedies whatsoever.

Table 1 gives a detailed account of the results achieved in the treatment of more than 350 cases of dermatitis venenata due to poison ivy or oak treated with the toxin (antigen) method.

A study of the table shows that there are records of 356 patients suffering from dermatitis venenata due to either poison oak or poison ivy and treated with the toxin (antigen) method. Of this number, ten patients, or 2.8 per cent., received no benefit whatsoever and nine patients, or 2.5 per cent., received some, though doubtful, improvement. These results compare favorably and, indeed, are vastly superior to those obtained by any form of local application as yet devised for the treatment of this affection.

In some instances, improvement was noted as early as two hours after the institution of treatment; and when success was attained, improvement never occurred later than forty-eight hours after treatment was begun. In the vast majority of cases, improvement was noted twenty-four hours after the institution of this mode of treatment. In many instances, one or two injections were all that were required to cure, but in the larger number of instances, three or four injections were deemed necessary.

DESENSITIZATION

The desensitization that can probably be conferred by the antigen method of treatment against dermatitis venenata by poison ivy or poison oak is in all probability of short duration and one which has to be renewed from time to time. It also appears probable that this immunity is a tissue immunity similar to that of hay-fever. Various immunologic studies have failed to disclose any immune substances in the blood serum of susceptible patients. The technic for immunization varies slightly from that employed in the cure of the attack. The injections, numbering four, are given intramuscularly, three or four days apart. The dose varies from 0.3 to 0.5 c.c. After the course of intramuscular injections, the patient is advised to take the tincture of rhus toxicodendron or the tincture of rhus venenata, as the case may be, by mouth, for a period of one month. The dose of this mouth remedy varies from 5 to 10 drops of the tincture well diluted in water, after meals.

TABLE 2.—*Results Obtained by the Use of the Toxin (Antigen) Method of Desensitization in Patients Suffering from Dermatitis Venenata Due to Poison Ivy*

Physician	Number of Patients Desensitized	Results
1. Dr. B.	1	No return of poisoning since last acute attack (no dates given in report); result was apparently favorable
2. Dr. R.	1 (himself)	Highly favorable result; although exposed, had practically no outbreak
3. Dr. T.	1	Favorable result; patient, although exposed, had practically no outbreak
4. Dr. P.	1	Favorable result; patient, although exposed, had practically no outbreak
5. Dr. S. (author)	16	Favorable results in fourteen cases; in two cases the author failed to immunize the susceptible patient

1. Strickler, Albert: The Toxin Treatment of Dermatitis Venenata, J. A. M. A. 77:910 (Sept. 17) 1921.

In all, we have the record of twenty patients who have been immunized by this method and whom we have been able to follow. Table 2 summarizes the results obtained by various physicians, including the author, in their effort to desensitize highly susceptible patients.

The following are the records of some of the patients desensitized:

REPORT OF CASES

Dr. R. reports one case: "I have been a sufferer from ivy poisoning almost every year. I took the whole course of treatment as directed, the three injections and tincture by mouth. I paid no more attention to where I went on my fishing trips than if the weed were nowhere in sight. On one occasion, I had a small row of blisters on one hand which remained distinctly localized and did not spread at all."

Dr. T. reports one case: "This person spends her summers in the northern woods, and each summer suffers intensely from rhus poisoning. During the month of June last year, I gave her six injections of the antigen, following the last of which she departed immediately for the north. She then took the preparation by mouth, as outlined. On her return home in late September, she related that she had had no trouble during the months of July and August, although frequently exposed, but had had a very slight attack about two weeks before arriving home, and three weeks after the use of any drug by mouth. She felt sure that all credit was due to the use of the preparation."

Dr. P. reports one case: The treatment was administered in July, 1922, with four immunizing doses at weekly intervals. This patient has always been susceptible to rhus dermatitis, and the past summer was her most comfortable summer in years. While on her vacation in August, after exposure to rhus, she had about a dozen scattered blebs, on the arms and legs. She was given an injection of the toxin, and the blebs dried up within twenty-four hours. This patient could not take the rhus tincture internally, as it caused an inflammation of the buccal mucous membrane.

AUTHOR'S SERIES

H., a young boy, highly susceptible to poison ivy, was immunized in the early summer of 1921. Although frequently exposed, he passed through the summers of 1921 and 1922 without any attacks of dermatitis venenata. Early in 1923, the patient developed a mild attack of poison ivy.

Miss Q., aged 11 years, highly susceptible to poison ivy, was immunized in the summer of 1921, and since that time has been free from dermatitis venenata, although exposed.

Miss R., aged 9 years, also highly susceptible to dermatitis venenata, caused by poison ivy, was immunized in the summer of 1921. Although exposed since, she has been free from any attack.

Mrs. H. T. F. had been subject to dermatitis venenata every summer. It was so severe that she was confined to bed for a period of from four to six weeks. During the summer of 1921, she was given five intramuscular injections of rhus toxin, dose 0.5 c.c., every third day. After this course of treatment, she went out in the woods and even picked the ivy leaves without suffering any ill effects.

In this connection, I quote from an unpublished communication of H. E. Alderson, by courtesy of the author:

A young woman had acute dermatitis on her face and extremities, of two days' standing, caused by exposure to poison oak. The usual dose of 1 c.c. was injected intragluteally. The next day, her condition was somewhat improved. She was given another injection, 1 c.c. Within three days after the first dose, all her lesions had subsided to a great extent, and within two more days she was practically well. Locally, a zinc oxid starch was used.

To test her immunity, two months later, she deliberately rubbed some poison oak leaves into her skin. The results were most favorable. No dermatitis venenata resulted. Always, previous to this occasion, she was very susceptible to the effects of poison oak. This test seems to prove that immunity had developed.

I could enumerate other instances in which such desensitization has been accomplished, but the cases enumerated constitute sufficient evidence of what can be accomplished by this therapeutic procedure.

COMMENT

In the treatment of dermatitis venenata due to poison ivy or poison oak, the toxin (antigen) method of treatment constitutes the best method of procedure. Counting the unsuccessful and doubtful results in this series of 356 cases, there were noted nineteen cases, or slightly more than 5 per cent., in which failure or only slight improvement resulted. I know of no method of treatment in which such a small percentage of failures has been encountered. It is to be emphasized that these results were obtained without the additional use of local applications. It is also to be remembered that relief is obtained usually within twenty-four hours after the institution of treatment, and only occasionally and in very severe and generalized cases does a forty-eight hour interval elapse before relief is obtained. Cure of this condition is obtained within from four to five days after the institution of this mode of treatment.

In the desensitization of highly susceptible patients, our results seem to be encouraging. With the small series at our command, one cannot be too dogmatic or overenthusiastic. All that can be said is that the use of this method is to be encouraged, as it is incapable of doing harm, is worthy of a trial, and the results thus far obtained by a number of different physicians, including myself, are very highly encouraging.

The method of desensitization is a rational one, and it is based on principles that have been successfully applied in the desensitization of other disease conditions. Considering that, in the past, no hope of prevention could be held out for these constant sufferers from poison ivy and realizing the great suffering and dread which these patients undergo, there is more than ample justification for the employment of this method of desensitization. The treatment is simple and can be carried out with ease, and if future results justify past experiences, this treatment should prove a great blessing to these highly susceptible persons. The method of procedure in desensitization is a combination of intramuscular and oral administration, exact technic of which has already been indicated.

As a result of the combined experiences here recorded, this form of therapy, both as a mode of treatment and as a method of desensitization, is offered to the profession as a great advance in obtaining relief for their patients suffering from poison ivy and poison oak.

327 South Sixteenth Street.

Hospital Is a Laboratory.—The value of the hospital as a laboratory cannot be too greatly emphasized. The congregation and variety of cases makes possible in a few months an experience that it would take otherwise years to obtain, but in this bedside experience should be included those diseases now prevalent, such as, mental, tuberculosis, and pediatrics. Furthermore, definite and comprehensive experience should be given in obstetrics and adequate experience as well as instruction in normal child life. The period of case experience should be of sufficient length and continuity to fix impressions and enable experimentation for the end result.—A. W. Goodrich, *Hospital Social Service* **7**:172 (March) 1923.

ENCEPHALITIS FOLLOWING INTERFERENCE WITH DEAD TEETH

REPORT OF TWO CASES *

ROBERT BURNS, JR., D.D.S.
SAN FRANCISCO

In 1921, Potts [1] reported a case of encephalitis developing rapidly after the extraction of a dead tooth. I have seen two similar cases. No attempt will be made here to discuss the etiology of encephalitis, but special attention may be directed in Case 2, to the entire absence of contact with an active case and the great improbability of contact with a carrier. The patient had not suffered from a prior attack of influenza and had not come in contact with any one so suffering.

REPORT OF CASES

CASE 1.—S. B. F., a married woman, aged 38, referred to me, Sept. 13, 1920, by Dr. William Banks, relative to the possibility of oral infection, had been in poor health for a number of years, had given evidence of hyperthyroidism, and had once been told that she had "incipient tuberculosis." Both these conditions were quiescent when she was sent to me, but she suffered a good deal from an anacid gastritis with incident colitis. To relieve pain, she took codein and, occasionally, heroin; she also was addicted to the use of barbital. The patient was a writer, a clever woman, but plainly of the neurotic type. Her married life had not been happy, and about one year prior to the time when I saw her, she had suffered the shock of an automobile accident in which her son was killed.

Oral examination revealed a hopeless pyorrhea, with such a condition of malocclusion that masticatory efficiency was almost nil. Several teeth were absent, and pus exuded, on pressure, from the gums. In the upper jaw, nine of the remaining teeth were dead, infected or showed larger or smaller areas of rarefaction about the apexes. The right upper lateral incisor was absent, but there remained in situ the temporary lateral which had been devitalized for a porcelain crown supported by a pin. The root canal of this tooth had been perforated, and filling material protruded into the cancellous bone. On the gum over this tooth, also involving the permanent cuspid, was a tumor, irregular in outline and approximately 15 to 20 mm. in diameter—a papillary fibroma. In the lower jaw there were five dead teeth.

September 30, under ether, all the teeth were removed. The tumor, with the bone and the two teeth involved, was removed *en bloc*. No unusual circumstances occurred during the operation. The anesthetic was started at 9:05 and stopped at 10:20 a. m. At 3 p. m. the patient complained of headache, which persisted and required the administration of morphin. The following morning she was apathetic, and remarked, "Why, doctor, I see two of you." She had slight fever, the temperature being between 99 and 100 F., with a pulse rate of 100 to 112. She was restless and slept poorly, and, October 2, insisted on returning to her home.

October 4, she was dull, somnolent and apathetic; her faculties were not clear, and she answered dully when spoken to. It was said that she had taken barbital; how much was not known. Twice during the night, she had also been given one-eighth grain of morphin, hypodermically. I warned against the use of these drugs, and advised Dr. Banks.

October 6, I removed the sutures in the mouth; the wounds were healing well, and that phase of the case was satisfactory, but I was worried about the drowsiness. I again cautioned about cutting down the morphin. The temperature at that time was 100. That evening, at about midnight, Dr. Banks was called hurriedly, and found the patient in coma. A partially empty bottle of tablets of barbital (veronal) was found in the bed. There was no positive knowledge that the patient had swallowed any of the tablets, but the usual emergency measures were taken. Dr. O. B. Jellinek was called in consultation, October 8, and lumbar puncture was done. Examination of the fluid was negative. At this time, the physicians made the diagnosis of epidemic (lethargic) encephalitis.

The patient remained in complete coma for at least three or four days, and then slowly began to recover consciousness. During the period of coma, the evening temperature was about 102; the morning temperature was lower. By October 12, the patient was much better, and eventually recovered completely. For two years she enjoyed better health than she had had for many years.

In October, 1922, she again began to fail in health, and for a period of about two months was confined in a private institution, the victim of manic-depressive insanity. At the height of this attack, she developed acute mastoiditis, and radical mastoidectomy was performed. She made a good recovery from this and the mental disorder, and is at the present time apparently well.

CASE 2.—T. E. B., aged 34, mother of two children, residing on a ranch in California, had always had good health, except that a little more than six years previously she had suffered a "nervous breakdown." She had entirely recovered, and was doing all the usual work of a ranch housewife. She had pyorrhea and six dead teeth, from which she suffered no local discomfort until January, 1922, when a dentist "killed the nerve" of two additional teeth by the application of arsenous oxid. One tooth gave no trouble; the other, in April, began to ache, the gum swelling slightly. The patient took acetylsalicylic acid.

May 10, the tooth ached badly, and was sore to the touch, and again the gum swelled.

May 11, the dentist drilled into the tooth. The patient said that blood and pus escaped, and relief was immediate.

May 16, she felt tired and dull. The next day she had dizzy spells and occasional diplopia.

May 20, diplopia was still present, and there was stiffness of the tongue and ringing in the ears.

The following day there was difficulty in swallowing and pronounced ptosis of the eyelids, with marked drowsiness, dryness of the mouth and inability to use the arms and shoulder muscles. The weakness of the arms continued, the right leg dragged, and vomiting occurred after a dose of calomel and also after taking salts. The patient reports that, May 25, she was at her worst, was helpless from the waist up, could not lift her head if it fell forward, and could scarcely swallow water.

She was examined by Dr. T. C. Edwards of Salinas, who reported to me that, when he first saw her, she had a slight elevation of temperature, with difficulty in deglutition and speaking, evidently on account of inability to use properly the muscles of the tongue and throat. In fact, all muscles, from those supplied by the brachial plexus upward, showed a decided loss of tone, though they were not paralyzed completely. Examination of the urine revealed: albumin,; no sugar; no indican; many stratified epithelial cells; several granular casts and one fine granular cast.

The patient remained in Salinas under the care of Dr. Edwards until June 2, when I first saw her. She was placed in St. Francis Hospital, under observation by Drs. Thomas Kelly and Walter F. Schaller, who concluded that the patient was suffering from epidemic encephalitis. The oral findings were: general pyorrhea of advanced degree with deep pockets, with gums turgid and bleeding on slight pressure. Both upper central incisor teeth, the left upper bicuspid, right lower third molar and second bicuspid were dead, with rarefied areas in the apexes; the right lower central incisor had an area of rarefaction in the apical region, the root having been amputated several years before; the left lower first and second bicuspids and the first molar, which was the tooth which the dentist had probed, showed rarefied areas.

July 31, under a local anesthetic, I removed both left lower bicuspids and the first molar by turning back a flap and removing enough bone to uncover a large abscess cavity, into which the roots of the teeth projected. Healing was rapid and uneventful, and there was no systemic reaction.

* Read before the St. Francis Hospital Clinical Society, March 30, 1923.

1. Potts, H. A.: Report of Case of Cephalic Chancroid, and Case of Encephalitis Following Extraction of a Tooth that had Infection at the Apex, J. A. M. A. 77: 1885 (Dec. 10) 1921.

November 1, Dr. Edwards wrote me: "Her condition is markedly improved. The only thing she complains of now is the uncertainty of movement of the hands when they are elevated above the head, as in the efforts to fix the hair. There is some dryness of the mouth, under unusual excitement, and on exertion she gets a little dizzy and is short of breath. She weighs over 160 pounds [73 kg.] and looks exceedingly well." In January, 1923, when I did further dental work, all symptoms had disappeared except slight weakness in the deltoid muscles, under stress.

COMMENT

I would emphasize the improbability of contact with epidemic encephalitis in Case 2. The patient lives on an isolated ranch, 12 miles from a village of a few hundred inhabitants, where she consulted the dentist. The practice of this dentist is purely local, and he knows, personally, all his patients and their families. If any of his patients had ever had epidemic encephalitis, the dentist and the whole community would have known it. It is not impossible that the stirring up of the dental focus liberated into the blood stream an organism that lodged in the encephalon and produced the syndrome recorded.

135 Stockton Street.

INSULIN IN DIABETES COMPLICATED BY INFECTION

NECROPSY REPORT OF THREE FATAL CASES *

SOLOMON STROUSE, M.D.
AND
OSCAR T. SCHULTZ, M.D.
CHICAGO

Our own clinical experiences with insulin [1] have been uniformly favorable. It has reduced blood sugar, caused the disappearance of glycosuria, increased the patient's weight and working capacity, and in several instances has tided over patients in crises which without insulin probably would have ended in death. One of our first patients had an unusually severe type of disease complicated by fever of unknown etiology, and ending in death from pneumonia while under insulin therapy. Two other patients died while receiving insulin; in all three, immediate necropsies were obtained. It seemed to us that a careful clinical and pathologic investigation of these three cases would be of considerable importance in determining the value of the new remedy under unfavorable circumstances. All three cases were complicated. Infection played an important rôle in the death of all. Clinicians have always dreaded the onset of even a mild infection in patients with diabetes; this evaluation of insulin in infection should be of particular importance at the present time. In addition to the three fatal cases, we can add two cases of diabetes with severe infection in which insulin exerted a definitely potent and valuable effect.

CASE 1.—*History.*—W. D., a man, aged 38, white, admitted, April 13, 1922, had had diabetes three and one-half years, and had shown a steadily downward course. At the onset of the disease he weighed 150 pounds (68 kg.); in April, 1922, he weighed only 96 pounds (43.5 kg.).

He was 6 feet, ½ inch tall and looked like a skeleton. The eyes were deeply set and sunken into hollows. There was a systolic blow over the mitral area; there was no heart enlargement and no signs of decompensation. No other abnormalities were found on careful examination.

The urine on a test diet of 40 gm. of protein, 90 gm. of fat, and 50 gm. of carbohydrate, contained 30 gm. of sugar, 8.5 gm. of nitrogen, and gave marked positive acetone and ferric chlorid reactions. The blood sugar was 0.28 per cent.; nonprotein nitrogen, 46.2; carbon dioxid, 51.3 per cent. by volume.

A rather difficult patient to handle dietetically, he was discharged from the hospital, June 14, 1922. His diet then was: protein, 40 gm.; fat, 125 gm.; carbohydrate, 30 gm.; calories, 1,405; weight, 106½ pounds (48.4 kg.). The blood sugar was 0.12 per cent.; the urine was normal, and in general he felt stronger.

He kept in good condition most of the summer, mainly sugar-free, but we were never able to increase his tolerance beyond 1,400 calories. Oct. 26, 1922, he again entered the hospital for the study of insulin treatment.

Clinical Course.—On admission, no change was noted in the physical examination, except a loss of weight to 101 pounds (45.8 kg.). On a diet of protein, 45 gm., fat, 130 gm., and carbohydrate, 25 gm., calories, 1,450, the daily sugar output was 13 gm.; nitrogen, 9 gm.; the acetone and ferric chlorid reactions were negative. The blood sugar was 0.208 per cent.; carbon dioxid, 50.7 per cent. by volume.

October 31, 10 units of insulin was injected. The following day only a trace of sugar was excreted, and on the second day, the urine was sugar-free. From 10 to 12 units was given daily; the diet was increased very rapidly, so that by the end of the seventh day, it was protein, 65 gm.; fat, 160 gm.; carbohydrate, 95 gm. The urine remained sugar-free. His weight rose to 104 pounds (47.2 kg.), and he felt strong and "peppy." The blood sugar was 0.18 per cent. The amount of glucose burned had risen in one week from 38 to 133 gm.

A period of experimental study of the possibilities of giving insulin by inunction resulted in immediate glycosuria; but successful insulin therapy was noted from November 17 to December 4. On this date the diet consisted of protein, 65 gm.; fat, 150 gm.; carbohydrate, 65 gm.; calories, 1,870; the weight, however, was only 102 pounds (46.3 kg.), despite the absence of abnormal urinary constituents.

Beginning December 4, a definite change in the clinical picture was observed. At irregular intervals the patient's temperature rose, at times only as high as 99.4, again to 101.8 F. There was no regularity to the febrile recrudescences, and the only manifestation of their occurrence was the apathy of the patient. Physical examinations were made by us as well as by other members of the hospital staff, but nothing was found to account for the fever. The systolic heart murmur noted at the first examination was constantly present; otherwise there were no physical signs of disease. This febrile course lasted until December 31. From this date until Jan. 27, 1923, the temperature showed weekly remissions. Several blood cultures were negative. The Wassermann test was negative.

During this time the patient gradually grew more apathetic and steadily lost weight (98 pounds [44.5 kg.] before death). January 27, he developed an acute lobar pneumonia of the left upper lobe, from which he died, January 31.

During all this time, insulin was pushed. During one period of about a week between December 16 and 21, work with other patients showed that the extract was not very potent, but this was quickly remedied by an extra supply. The dosage employed varied between 30 and 40 units. Sugar was almost constantly present in the urine in amounts from 3 to 30 gm. By January 1, the diet had been reduced to protein, 45 gm.; fat, 130 gm.; carbohydrate, 25 gm.; calories, 1,450. The blood sugar was 0.308 per cent.; acetone appeared in the urine during this period. There were no other signs of acid intoxication.

Necropsy.—This was done three hours after death. The brain was normal, and the hypophysis showed no change. The thyroid was decreased in size, each lobe measuring 4 by 2.5 by 0.8 cm. Dense fibrous adhesions almost completely obliterated each pleural cavity. The peribronchial lymph nodes were slightly enlarged, and one was fibrous and partly caseous. The upper lobe of the left lung was completely consolidated in a stage of gray hepatization. The pericardial

* From the Medical Service and the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital.

1. The insulin used in this study was insulin-Lilly.

cavity contained about 200 c.c. of clear fluid. Small, calcified nodules were scattered about in the visceral pleura of each lung. Beneath the capsule of the liver were about twenty whitish, firm nodules from 1 to 2 mm. in diameter. Similar nodules were present beneath the capsule and in the substance of the spleen. The pancreas measured 15 cm. in length, 6 cm. in greatest width and 0.8 cm. in thickness; it weighed 27 gm. It was finely lobulated, soft, and salmon pink.

Microscopic examination revealed marked acute degenerative changes in the myocardium. The cross striations of the muscle fibers were indistinct; the cytoplasm was swollen, cloudy and vacuolated. The aorta contained nodular areas of sclerosis with central degeneration. In the liver there was marked central congestion, with compression and partial atrophy of the cells of the central zone. Many of these cells contained granular brown pigment. In the rest of the liver lobule, the parenchyma cells were swollen and compressed the sinusoids. Their cytoplasm was homogeneous and glassy. Some of the portal vein branches of the interlobular tissue were surrounded by narrow zones of leukocytic infiltration. The nodules of the pleura, liver and spleen had a thick outer layer of very dense, hyaline, fibrous tissue poor in nuclei, and a center of granular, homogeneous, structureless, often partly calcified material. The partly caseous peribronchial lymph node had a similar structure. All of these lesions appeared to be old, well healed tubercles with no evidence whatever of recent activity. The changes in the consolidated lung were those typical of lobar pneumonia in the gray hepatization stage.

In the pancreas, an acinous arrangement was indistinct, the entire pancreas being composed of small groups of cells and suggesting fetal pancreatic tissue in appearance. The lobules were small, but ducts were numerous and were more closely placed in the tissue than normal. The islets were decreased in size, but definitely recognizable. In general, their size was small, the average dimensions being 70 by 90 microns; a few were larger, and measured 130 by 160 microns. The islets were composed of anastomosing cords one or two cells wide, the cords being separated by broad sinusoids. The cells were of uniform size and morphology. Their nuclei were relatively large and vesicular. The cytoplasm formed a narrow rim about each nucleus, and was homogeneous, finely granular and rather deeply stained. In some of the cells it was vacuolated. In a small number of islets, marked degenerative changes were present. Such islets were decreased in size even below the average dimensions given above. They were almost completely transformed into an eosin-stained, coarsely and finely vacuolated ground substance, in which the sinusoids could not be recognized. This material still contained a few cells, some with shrunken pycnotic nuclei, others with greatly enlarged hydropic nuclei poor in chromatin.

This was a severe case of diabetes in which the maximum glucose tolerance under dietotherapy alone was 30 gm., and which immediately reacted to insulin by a tremendous increase in tolerance. During the treatment a fever developed, the etiology of which was not disclosed even at necropsy. The old healed tubercles were completely encapsulated and showed no signs of activity; active tuberculosis can hardly have been the cause of the fever. At the onset of fever there was a large increase in sugar excretion, which was certainly due in part to a poor quality of insulin, as was proved by the immediate beneficial effect of some other insulin. After potent insulin was again used, the sugar excretion dropped, but despite diminished food intake and increased insulin dosage, the following febrile period was characterized by the constant excretion of small amounts of sugar daily. During this period the patient's general condition gradually deteriorated, he grew weak and apathetic, lost weight, and developed an acute lobar pneumonia from which he died.

Course in Case 1. Available carbohydrate (according to the formula C. + 0.58 P.) is recorded as total grams in twenty-four hours; urinary sugar, as total grams excreted in twenty-four hours. At the point marked "Rubbed" on the insulin curve, subcutaneous administration of insulin was replaced by inunctions of insulin in hydrous wool fat. From December 16 to 24, the insulin used was of low potency; on the days marked "W" on the insulin curve, it was replaced by insulin from another source; following this period the insulin was again highly potent.

The cause of the constant glycosuria is difficult to determine. The extra glucose derived from body protein should have been taken care of by the amount of insulin used. Whether this sugar existed in a form not influenced by insulin is a problem raised by the recent work of Winter and Smith.[2]

In attempting to interpret the results in this case, we believe we must be guided by a sense of mathematical proportions. Diabetes is a disease characterized by a mathematical derangement of metabolism, and insulin is a therapeutic agent with mathematically defined possibilities. From evidence so far collected, it is apparently true that the power of inducing sugar combustion in the patient with diabetes is not a constant factor in each case.

2. Winter, L. B., and Smith, W.: J. Physiol. **56**: 227 (May) 1922; **57**: 100 (Dec.) 1922.

In the present case the course can be divided into four stages: (1) The maximum improvement under dietary therapy, followed by a stationary period during which the patient barely held his own; (2) a period of marked improvement under insulin therapy; (3) the febrile period, during which the insulin effect was less powerful than before, and (4) the onset of acute lobar pneumonia in a man who for more than three years was steadily going down-hill from a severe diabetes. This must be considered the real reason for the failure of insulin to prevent death.

CASE 2.—*History.*—Mrs. K. K., aged 65, white, seen on the night of March 13, 1923, had been suffering for two weeks from an attack of upper respiratory infection which was epidemic in Chicago at the time. In the preceding twenty-four hours she had rapidly grown worse, and was becoming sleepy, and disoriented. The respirations were becoming increasingly rapid. She gave a history of untreated diabetes with constant glycosuria and much loss of weight for fourteen years.

Physical Examination.—The patient was much disoriented and very "dopey," but could be roused by strong stimuli. The ocular tension was low. The breathing was distinctly of the Kussmaul type; acetone was evident in the breath. The pharynx was injected; scattered râles were present in the bases of both lungs; the heart measured 11 cm. to the left in the fifth interspace, and 3.5 cm. to the right. A rough systolic blow was heard at the apex. The pulse was 120 and very small. The deep reflexes were not obtained. A plain specimen of urine contained much sugar, albumin, acetone and diacetic acid.

Treatment and Course.—Her condition was so extreme that she was rushed to the hospital, and without waiting for further laboratory study, insulin injections were immediately begun. At 10:30 p. m., 12:30 a. m., 3 a. m. and 7 a. m. she received 10 units. Digitalis was given in large doses; orange juice, milk, hot drinks and sodium bicarbonate were also given.

Early on March 14, it was evident that the threatened diabetic coma had been averted, but the general condition of the patient was bad. Her temperature was 102 F.; the pulse, 160 and irregular; respirations 40, but not of the Kussmaul type. She was still disoriented. The tongue was dry. A lobar pneumonia of the left lower lobe was found; the heart was dilated. The liver was palpable 5 cm. below the costal margin.

The urine contained decidedly less sugar and less acetone than the specimen voided the night before. The blood sugar was 0.41 per cent.; nonprotein nitrogen, 67.2; carbon dioxid, 40 per cent. by volume; Wassermann reaction, negative; hemoglobin, 60 per cent.; red blood count, 2,900,000; white blood count, 4,500.

The treatment was continued as outlined; insulin in 20 unit doses was given at 1:30 p. m. and at 3:30 p. m. The afternoon urine contained only a trace of acetone. Cardiac weakness became steadily more marked, and she died at 6:40 a. m., March 15.

Necropsy.—This was done at 9 a. m. The lower lobe of the left lung was almost completely consolidated, its cut surface being red and rather dry. The lower right lobe and the upper left lobe contained patchy areas of consolidation. The remaining lung tissue was edematous. The aorta appeared normal, but the coronary arteries of the heart were sclerotic. The myocardium was red, and contained an increased amount of connective tissue. The pancreas measured 15 by 3.5 by 0.8 cm. It was pink, and contained a slightly increased amount of fat. The remaining organs showed no gross changes of importance.

Microscopic examination disclosed that the process in the lungs appeared to be a confluent bronchopneumonia. The heart muscle fibers were swollen, and in some the striations were indistinct and the cytoplasm was vacuolated. Small, scarlike areas of connective tissue were present in the myocardium. Groups of liver cells contained large fat vacuoles. The nonvacuolated cells were swollen, and their cytoplasm had a homogeneous, waxy appearance. Many of the nuclei were edematous. Parenchymatous changes were marked in the kidneys.

Small, round areas of fat were scattered about within the lobules of the pancreas, and interlobular adipose tissue was moderately increased in amount. The islets were few in number, and averaged about 90 microns in diameter. A few were larger, and had dimensions of 160 by 220 microns. The islet cells varied somewhat in size, and had a less definite cordlike arrangement than in the first case. The smaller cells had finely granular, solid, deeply stained cytoplasm. In the larger ones the cytoplasm was more faintly stained, and was finely to coarsely vacuolated. The nuclei varied considerably in size. Chromatolysis was evident in some of them. The acinous tissue appeared normal.

This was a neglected case of diabetes in an elderly woman who developed an upper respiratory infection terminating in bronchopneumonia. Severe diabetic acidosis was produced, with characteristic Kussmaul air hunger. Under insulin therapy there was a striking and rapid disappearance of the signs of diabetic acidosis, although the pneumonic intoxication and the cardiac decompensation increased in severity and caused death.

CASE 3.—A widow, aged 70, white, admitted, Feb. 2, 1923, complained of diabetes of five years' duration; steady itching around the genitalia; infection of the right foot for four weeks, and abdominal swelling for five years.

The diabetes was mild. For two years after the onset she had sugar, and then under moderate diet restriction she was free of sugar for three years. Three weeks before admission, sugar reappeared. The swelling of the abdomen was first noticed five years ago; it increased in size for three years, and has been quiescent for the last two years. Five years ago she was told she had a prolapse of the bladder. The infection around the right foot had steadily been growing worse, and was associated with much pain.

Examination.—The patient looked very old. The lungs were clear. The heart was enlarged. The systolic blood pressure was 136; the diastolic, 78. The peripheral arteries were thickened. No pulsation was felt in either popliteal space. There was an area of infected gangrene on the inner side of the right foot. Occupying a large part of the right side of the abdomen was a large tumor mass, which in parts was cystic and in other parts was firm and nodular (cystic tumor of ovary). The skin around the genitalia and thighs was red and inflamed.

The Wassermann reaction was +++ with cholesterinized antigen, and + with lipoid and syphilitic antigens. The blood sugar on admission was 0.20 per cent. The urine contained sugar in varying but small amounts.

Although only a small amount of sugar was present in the urine, and the blood sugar was comparatively low, the gangrene and infection both spread rapidly. The temperature rose to 108.8; the pulse was 120. The consulting surgeon advised amputation, which was refused. With the marked arterial sclerosis present it was not believed that the glycosuria or low grade hyperglycemia were causative agents. Insulin, however, was used from February 16, at first in small dosage, and then 20 units daily. March 10, the patient became drowsy, and on March 11, at 9:30 a. m., she died. There was no acetonuria; sugar was present only in traces. Unfortunately, we were not able to observe this patient for the last two weeks of her life, and no further blood chemical studies were done. However, the notes on the chart indicate that the patient did not die of diabetic coma but of the toxic effects of her infection.

Necropsy.—This was begun within an hour after death. In brief, the findings were a large cystadenoma of the right ovary; fibrous pleuritis; chronic bronchitis; pale, hypertrophied heart; coronary sclerosis; a mottled, fatty liver; chronic cholecystitis with stones; acute splenic tumor, with a large recent infarct; atrophic fatty pancreas; slight nephritis; uterine polyp; general extensive arteriosclerosis with marked calcification, and gangrene of the foot.

Microscopic examination revealed the same degenerated parenchymatous changes in the myocardium, liver and kidneys as were present in the other two cases. Arteriosclerosis, with obliteration of numerous smaller arteries, was marked. The interlobular tissue of the liver contained many areas of dense lymphocytic infiltration about the vessels.

The pancreatic tissue was extensively replaced by fat, the latter forming large areas in which one to a few lobules of pancreatic tissue were embedded. Smaller areas of fat were present within some of the lobules. The islets present were of normal size, averaging 180 by 260 microns in diameter. Their number per lobule appeared normal, but the total number in any given area of pancreas was decreased by the loss of pancreatic tissue through fatty replacement. The islet cells were large and polyhedral, and had large, vesicular, round nuclei. An occasional nucleus was undergoing chromatolysis. The cells formed solid masses of considerable size, these masses being separated from one another by sinusoids. The cytoplasm of a few cells was vacuolated; that of the nonvacuolated cells was finely granular and faintly stained. In some of the lobules which were completely surrounded by fat, interlobular and intralobular stroma was increased; but when islets were present in such lobules, they were not involved in the fibrotic process.

Review of this case forces the conclusion that diabetes played a minor and insignificant rôle in the condition as presented in the hospital. The arteriosclerosis was surely responsible for the foot gangrene and infection. The presence of chronic cholecystitis and stones may account for the low grade glycosuria. Whether the arteriosclerosis originated as a result of diabetes or was part of general senile sclerotic changes in which the pancreas took part is also open to doubt, although we are inclined to the latter view. At any rate, the comparatively low blood sugar in a case in which high grade hyperglycemia may be expected would greatly lower the probabilities of effective insulin therapy.

COMPARATIVE STUDY OF THE PANCREAS

The pathology of the pancreatic islets in diabetes has been the subject of numerous reports which it is unnecesary to review at this time. The changes may be so slight as apparently to be out of all proportion to the clinical severity of the disease; but it is the occurrence of such not very obvious changes, limited strictly to the islets, that furnishes the strongest evidence of the relation of islets to diabetes. Abnormal functioning of the islets, without definite morphologic changes detectable by ordinary methods, must be considered possible. Diffuse pancreatic fibrosis invading both acinous and islet tissue is seen in some cases of diabetes. This condition was not present in the pancreas of the cases reported above. Usually the pancreatic involvement is much less obvious, and consists of hyaline degeneration or fibrosis or both combined, limited sharply to the islandic tissues. To these qualitative changes must be added a quantitative one, a decrease in the number of islands. Allen has emphasized hydropic degeneration of the islet cells, manifested morphologically by vacuolization of the cytoplasm, as the most constant finding in experimental diabetes. This degenerative process may be succeeded by hyalinization and fibrosis of the involved islands, and is probably the precursor of these terminal changes sometimes encountered. Of greater importance is the fact, pointed out by Allen, that hydropic degeneration may lead to dissolution of the islet cells with complete disappearance of the islands, the acinous tissue filling in the small defect thus brought about. Such a process of degeneration and disappearance of islands without fibrosis explains the condition frequently seen in the diabetic human pancreas, namely, a simple decrease in the number of islands without obvious changes in those still remaining. In the human pancreas, the stage of hydropic degeneration is usually not seen, probably because of the time elapsing between death and removal of the organ. By the use of specific staining methods, two types of cells, alpha and beta, have been found to make up the pancreatic islet. According to Allen, hydropic degeneration occurs first in the alpha cells, and the latter are the first to disappear, indicating a specific relation to diabetes even without the islet itself.

A careful study of the islets of the pancreas from cases which have been under insulin therapy is of importance in order to determine the degree of repair possible in the damaged pancreas. The ideal to be hoped for from insulin therapy would be such recovery of the islets from degenerative changes as would permit permanent maintenance of the patient with diabetes on minimal doses of the extract, or even without continuous administration of the material. The latter is not to be expected if the number of islands has been reduced to such a degree as to be incompatible with normal metabolic function, since regeneration of islands which have disappeared completely is probably out of the question.

In the three cases reported above, the necropsy was begun within an hour after death in one case, and within three hours in the other two cases. In Case 3, generalized senile arteriosclerosis was the underlying factor, and the slight grade of glycosuria was apparently associated with atrophy of the pancreas rather than with any marked grade of specific alteration in the islets. The latter were of about normal size and structure, but cytoplasmic vacuolization was present in a few cells. In the other two cases, the most striking gross findings were the decreased size and the increased vascularity and pink color of the pancreas, especially marked in the first case, which had been subjected to prolonged insulin administration. The vascularity was like that of the pancreas of a dog at the height of digestion, and raised in our minds the question whether insulin may not have a specific organ stimulating effect on acinous tissue in addition to its action in sugar metabolism. In both of these cases, vacuolar degeneration of the islet cells was present without fibrosis, the islands were diminished in numbers, and the average diameter of those remaining was decreased. It seems proper to conclude that hydropic degeneration over a prolonged period had led to disappearance of islands, and that the cause of the degenerative process was still active, in that vacuolated cells were still present in considerable number. In Case 1, there were a few completely degenerated islands, the latter being transformed into small areas of granular, vacuolated ground substance in which were embedded a decreased number of nuclei, some pycnotic and some greatly swollen and edematous. In this case the indistinctly acinous character of the pancreatic tissue was also striking. This has been referred to above as suggestive of the fetal pancreas. This condition and the small size of the acinous cells may have been the result of decreased functional activity due to the very low total metabolism of the patient over a prolonged period.

Sections from the different portions of the pancreas from the three patients were studied by specific granule methods. On our material, as is usually the case with that of human origin, the stains have not been so satisfactory as they are with animal material removed immediately after death. The zymogen-containing acinous

cells took on a deep violet color, but granules were indistinct. In the islets of the third patient, whose pancreas showed chiefly fatty replacement with normal appearing islets, a few larger cells with staining reactions like those of alpha cells could be recognized. Most of the cells had a diffuse, finely or indistinctly granular violet tone, lighter in color than zymogen-containing acinous cells. In the islets of the other two cases, only cells of the latter type were present, and no cells of the alpha type could be recognized. The absence of alpha cells is suggestive, but because of the uncertainty of the methods when applied to human material, undue importance is not attached to this phenomenon.

CASE 4.—*History.*—C. W. S., a man, aged 49, white, seen, March 7, 1923, had diabetes of ten years' standing, "more or less" under control. Most of the time he was not under a strict diet, but in the preceding year had been moderate in his consumption of carbohydrates. He had lost weight and grown considerably weaker. Ten days before, the small toe of the right foot was sore and inflamed; this had steadily grown worse.

Examination.—The patient appeared pale and sallow. There was general thickening of the peripheral arteries; there was no pulsation in the dorsalis pedis of either foot. The right small toe was covered with a purulent exudate which came from the base of the toe, between the toes, and from under a mask of dead skin covering the toe. After cleansing, two large gangrenous areas were seen—at the base of the toe and on the sole adjoining. A small gangrenous area was seen on the inner aspect of the toe. The tissue at the base of the toe was denuded almost to the bone. On the outer aspect of the great toe on the same foot was a large callus, around which a small gangrenous area was present.

The urine contained large amounts of sugar and some acetone.

Treatment and Course.—The patient was given a low caloric diet, low in carbohydrate, and was kept at absolute rest; the toe was cleansed and then kept dry. After five days the process had extended. He then entered the hospital for insulin treatment.

In the hospital on a balanced diet of protein, 35 gm., fat, 75 gm., carbohydrate, 37 gm., calories, 955, the sugar excretion was 13 gm.; acetone, negative. Insulin was given in 30 or 40 unit doses daily, and the diet was increased to 1,300 calories without producing glycosuria. The toe was kept clean and dry. Two surgeons were consulted; one advised immediate amputation of the toe; the other did not consider surgical amputation necessary, as the toe was bound to amputate itself.

April 15, the fasting blood sugar was 0.15 per cent.; the urine was normal; the tissue around the toe showed some signs of health. The small area of gangrene about the callus on the great toe had extended, and was now 1¼ inches long by ½ inch wide. April 28, the gangrenous areas around both toes were easily detached, and, when removed, the underlying tissue was found perfectly healthy.

We doubt whether such results would be possible without insulin.

CASE 5.—*History.*—Mrs. P., aged 54, white, entered the hospital, May 5, with a history of severe diabetes of at least six years' standing. While under treatment a year before, she developed severe acidosis. Eight days before admission, she became aware of a painful red swelling on the inner side of her right thigh gradually increasing in size.

Examination.—The breath was heavy with acetone. The patient looked flushed and ill. The temperature was 98.4. The general examination was negative. A large infiltrated abscess about 3 inches in diameter on the upper inner aspect of the right thigh was present. A plain specimen of urine voided at 4 p. m. on admission contained 3 per cent. sugar; acetone, +++; ferric chlorid, ++. The laboratory was closed, and the severe acidosis in the presence of an abscess did not warrant further delay in treatment. Hot applications were applied to the infected area. Dietary restrictions were ordered. At 5 p. m., 10 units of insulin was injected, and at 7 p. m., 10 more. The urine voided the next morning was sugar-free, and contained only a trace of acetone. The patient looked and felt quite different; acetone was absent from the breath. The abscess was incised, and much pus evacuated.

On the second morning the laboratory reported blood sugar, 0.19; nonprotein nitrogen, 36.4; plasma bicarbonate, 51.7.

The diet was carefully increased, and insulin was given in doses of 20 units daily. The infiltrated area around the abscess rapidly softened, and all pain disappeared. May 9, the patient was walking around the room.

The history of this patient indicated that she had a severe diabetes. No one who has seen the rapidity with which diabetic patients are thrown into severe acidosis and come by infections such as this abscess can doubt the importance of the result in this case. Although she was already on the verge of coma, the condition was completely and rapidly changed after two insulin injections.

SUMMARY

Insulin was given a severe trial in five cases of diabetes complicated by infection. Three of these patients died and came to necropsy, two having died of acute pneumonia and one of intoxication from a severe infected gangrene of the foot. The pathologic findings in these three cases were so extensive that it would be beyond reason to expect insulin to accomplish any more than it did. In two other cases the effect of insulin was truly remarkable.

In one case, in which the patient was dying of pneumonia and entered the hospital only twenty-four hours before death in a state of extreme acidosis, there was marked and rapid relief of the acidotic symptoms under insulin therapy, but the symptoms of intoxication due to the infection persisted.

In two of the fatal cases, the islets of Langerhans were decreased in number, and vacuolar degeneration was present in the islet cells, having gone on to complete degeneration of a few of the islands in one case. In the third, primarily one of senile arteriosclerosis in which glycosuria was a minor and late manifestation, the pancreas was largely replaced by adipose tissue, leading to a decrease in the number of islands, in some of which hydropic degeneration of a few cells had occurred.

In diabetes complicated by infection, insulin is a powerful therapeutic agent which may rapidly overcome the symptomatic effects due to diabetes, thus increasing the chances for a successful fight against the infection. Insulin alone, however, cannot overcome the latter, nor can it be expected to restore to normal, tissues which have undergone degenerative changes as the result of acute or long continued intoxication.

During the course of infection in diabetes there may occur a low grade of glycosuria which does not yield to increasing doses of insulin, although the extract may have kept the patient's urine free of sugar before the development of the infection. This may be due to the decreased sugar tolerance, which has long been known to be one of the effects of infection in diabetes.

Study of the islets of Langerhans in our fatal cases suggests that hydropic degeneration of the islet cells may persist, and perhaps progress, even when insulin is being administered.

Besetting Fears.—Fear is necessary to self-preservation. In itself it therefore is not morbid. It is morbid only when inappropriate to the situation which provokes it.—Williams: Dreads and Besetting Fears, Boston, Little, Brown & Co., 1923.

THE TREATMENT OF DIABETES MELLITUS WITH INSULIN *

RALPH H. MAJOR, M.D.
KANSAS CITY, KAN.

The recent isolation by Banting and his co-workers of an active glycolytic, nontoxic, pancreatic extract opens up a new era in the treatment of diabetes mellitus. Ever since the classical experiment of Mering and Minkowsky proved the existence of pancreatic diabetes, frequent attempts at specific pancreatic therapy have been made. These attempts in the past have been uniformly unsuccessful and now possess little but historical interest.

The isolation of insulin, which is described as the active hormone of the islands of Langerhans, has excited unusual interest among both physiologists and clinicians. Allen [1] has written an excellent summary of all articles published on this subject up to August, 1922, and enables one to trace step by step the various phases in the development of this important discovery.

Fig. 1.—Boy with severe juvenile diabetes, Dec. 7, 1922.

A more recent article by Banting, Campbell and Fletcher [2] describes the results obtained from the use of this preparation, in patients suffering from diabetes. They state that glycosuria is abolished, that ketones disappear from the blood and urine, and that the blood sugar is lowered and maintained at a normal level. They found also that the alkali reserve returns to normal and that the cardinal symptoms are relieved. Perhaps the most interesting statement that they make is that insulin is a specific in the treatment of diabetic coma.

Fig. 2.—Appearance of patient, Feb. 26, 1923.

The preparation of insulin (insulin-Lilly) which is made in the United States has been used extensively in this country during the last few months. We thought it might prove of interest to record the results obtained in this clinic with the use of this preparation. We have used it in the treatment of thirty cases, and the results obtained have confirmed the therapeutic value described by Banting, Campbell and Fletcher. This group consisted mainly of moderately severe cases, but also included four cases of severe juvenile diabetes, four patients on the verge of coma who could be aroused only with great difficulty, and three patients in complete coma. Since a detailed description of the cases is not attempted in this report, a few typical results are shown in the accompanying illustrations and charts.

The boy shown in Figure 1 is an example of severe juvenile diabetes. At the time the picture was taken, Dec. 7, 1922, he had had diabetes for two years, and it had been impossible to render him aglycosuric except on a diet of 5 per cent. vegetables, with days of complete starvation. His weight at this time was 15 pounds (6.8 kg.). Treatment was begun at the St. Louis Children's Hospital under the direction of Dr. W. McKim Marriott, to whom I am indebted for this picture and

* From the Department of Internal Medicine, University of Kansas School of Medicine.

1. Allen, F. M.: Summary of Publications on Insulin to Date, J. Metabol. Res. 2: 125, 1922.

2. Banting, F. G.; Campbell, W. R., and Fletcher, A. A.: Further Clinical Experience with Insulin, Brit. M. J. 1: 8 (Jan. 6) 1923.

for the earlier data in his case. Figure 2 shows the same boy, Feb. 26, 1923. At this time he weighed 30 pounds (13.6 kg.) and was on a diet of 55 gm. of carbohydrate, 85 gm. of protein and 100 gm. of fat. April 15, 1923, he was in excellent condition, weighed 32 pounds (14.5 kg.), and was on a diet of 60 gm. of

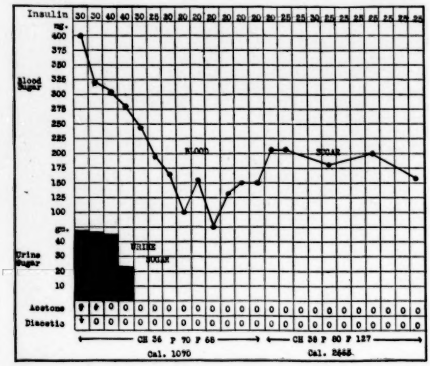


Fig. 3.—Disappearance of glycosuria in four days and fall of blood sugar from 400 to 100 mg. per hundred cubic centimeters in eight days. The dosage of insulin in units is given at the top. Acetone disappeared in two days, and diacetic acid in one day.

carbohydrate, 80 gm. of protein and 70 gm. of fat. During a period of three months his daily dosage of insulin has been reduced from 75 units to 15 units, which we feel is indication of an increasing carbohydrate tolerance.

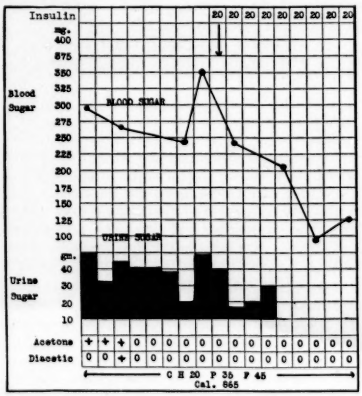


Fig. 4.—Effect of injections of insulin on a patient maintained on a constant diet throughout: disappearance of hyperglycemia and glycosuria.

Figure 3 illustrates the specific blood sugar lowering effect of the preparation.

A man, aged 35, who had had diabetes for two and one-half years, was admitted to the Bell Memorial Hospital on the verge of diabetic coma with a very severe nasal infection, which had led to gangrene of the soft palate. For six months before admission he had never been sugar free except by complete starvation. His condition was regarded as hopeless, and it was felt that this treatment offered his only chance of recovery. The patient was placed at once on a diet of 36 gm. of carbohydrate, 70 gm. of protein and 68 gm. of fat, and given insulin in doses of from 30 to 40 units a day. He became sugar free in four days, and diacetic acid and acetone disappeared from the urine promptly. The blood sugar fell to normal in eight days. Improvement in his general condition was striking. The soft palate healed, all symptoms of acidosis disappeared, and his gain in weight and strength has been rapid and constant. Following an increase in diet the patient again had an elevation of blood sugar, which, however, rapidly returned to normal. He continues aglycosuric with a normal blood sugar, and has resumed the practice of his profession.

A man, aged 35, whose case is charted in Figure 4, had suffered from diabetes for one year. He was placed on a diet of carbohydrate, 20 gm., protein, 35 gm., fat, 45 gm., with a total caloric value of 865, and was kept on this diet throughout. On this diet the patient had a continued hyperglycemia and glycosuria. Following the injection of 20 units of insulin daily, in two doses, the patient's glycosuria disappeared in four days and the blood sugar became normal in

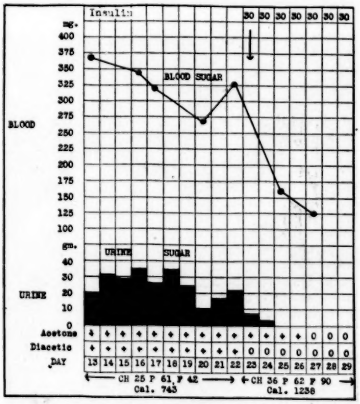


Fig. 5.—Disappearance of glycosuria and hyperglycemia under treatment with insulin, in spite of the marked increase in diet. The insulin figures are given in units.

seven days. This patient is under observation at the present time and has not shown any return of hyperglycemia or glycosuria.

In Figure 5 the undoubted effect of this preparation is shown in a very striking way.

A woman, aged 40, whose illness had a duration of two years, when admitted to the hospital was placed on a diet of 25 gm. of carbohydrate, 61 gm. of protein and 41 gm. of fat with a total caloric value of 743. Hyperglycemia and glycosuria were present on this diet. After remaining on the diet for ten days, the patient was given 36 gm. of carbohydrate, 62 gm. of protein and 90 gm. of fat, the total caloric value being 1,238. Coincident with the increase, the patient was given 30 units of insulin daily in two doses. The patient's glycosuria disappeared in two days, and in five days the blood sugar was normal. This patient is still under observation, and continues to show a normal urine and also a normal blood sugar.

We are also able to confirm the statement of Banting, Campbell and Fletcher that insulin is of great value in the treatment of diabetic coma. We have used it in three cases of coma.

The first of these patients died after admission to the hospital, but was moribund when the first injection was given, and was pulseless when first seen.

The second patient was a boy, aged 3, who had been in coma twenty hours, when the first injection was given, and who died five hours later. His blood sugar on admission to the hospital was 344 mg. per hundred cubic centimeters, and his carbon dioxid tension 10 per cent. by volume (Van Slyke). Just before death, following the injection of 35 units of insulin in two doses, the patient's blood sugar had fallen from 344 mg. to 244 mg. per hundred cubic centimeters, and the carbon dioxid tension had risen slightly to 11.5 per cent. by volume.

The third patient was a man, aged 26, who went into coma at 7 a. m., Feb. 21, 1923. He had shown symptoms of diabetes for only two weeks, and the positive diagnosis was made two days before the onset of coma. He was seen on the afternoon of the same day at 4 o'clock, and had been unconscious. His pulse was 140; the blood pressure, 75 systolic and 55 diastolic. His blood sugar was 667 mg. per hundred cubic centimeters. He was given 25 units of insulin at 4 p. m., at 8 p. m., at midnight and the following morning at 4 o'clock. At 8 a. m., February 22, he seemed partially conscious, and his blood sugar had dropped from 667 to 294 mg. per hundred cubic centimeters. He was given 10 units at 8 a. m., 11 a. m. and 1 p. m., twenty-four hours after the first dose, the patient, having received 130 units, was conscious and rational, talked with his family, and his blood sugar had fallen from 667 to 170 mg. per hundred cubic centimeters. Improvement has been constant since that time, and he has been free from sugar. This patient had a small area of gangrene on the right toe which cleared up completely in ten days, and a larger area on the sole of the left foot which healed in three weeks. This patient received no alkali, and in addition to receiving 130 units of insulin, was given 3,000 c.c. of physiologic sodium chlorid solution by hyperdermoclysis.

Two patients presenting a high degree of lipemia were studied. Figure 7, illustrates the marked fall of

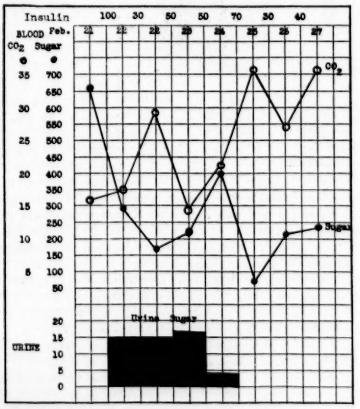


Fig. 6.—Reduction in blood sugar, with increase in carbon dioxid tension and disappearance of glycosuria in a patient suffering from diabetic coma. Recovery.

the blood cholesterol in a patient following treatment. In the two patients with marked lipemia, the milky appearance of the serum disappeared in four days, and in five patients, a cloudy serum became clear in the same length of time. These observations are of especial interest as emphasizing the close relationship between persistent marked lipemia and disturbed carbohydrate metabolism.

Our studies to date indicate that 1 unit of insulin takes care of approximately 2 gm. of carbohydrate in the diet. The study of the urinary output has shown that a polyuria of from 3,500 to 5,500 c.c. in twenty-

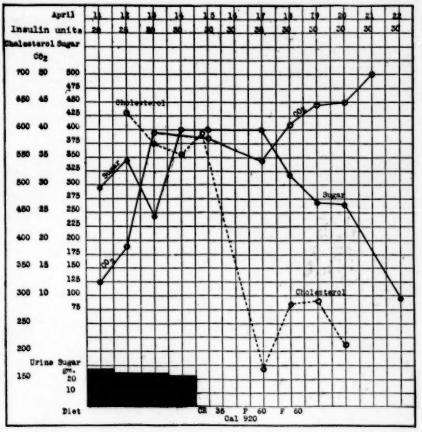


Fig. 7.—Fall in blood cholesterol in a patient showing a marked lipemia: rapid rise in carbon dioxid tension, patient semiconscious when admitted, and kept on a constant diet.

four hours is commonly present with an absence of glycosuria. Such large amounts of urine, however, were coincident with high values for blood sugar, although the ratio between the two was not constant. In only one patient in this series was sodium bicarbonate used. It had no apparent effect on the acidosis.

In two patients we have seen symptoms of collapse, accompanied by profuse sweating and a sense of great oppression and fear, three hours after the injection of 15 units of insulin. One of these patients was given 20 gm. of glucose by mouth, and recovered promptly. The second patient recovered quite suddenly from his collapse, without treatment. This attack occurred during the night, and the blood sugar the following morning at 8 o'clock was 50 mg. per hundred cubic centimeters. Both of these patients had a hypoglycemia when studied soon after these symptoms, and it is probable that the blood sugar was markedly depressed during the attacks. Our experience with these two patients emphasizes that caution must be exercised in the use of this preparation. This danger has been emphasized by Banting and his co-workers.

The blood sugar determinations referred to in this paper were carried out according to the method of Folin and Wu, the carbon dioxid tension in the blood by the method of Van Slyke, and the blood cholesterol by the method of Myers and Wardell.

SUMMARY

1. Insulin has a specific effect in abolishing glycosuria, hyperglycemia and ketonuria, and in relieving the cardinal symptoms of diabetes mellitus.

2. Patients treated with insulin have shown a prompt rise in carbon dioxid tension.

3. The marked lipemia often present in diabetes disappeared rapidly under treatment.

4. In one case of diabetic coma this treatment had a specific action, promptly restored the patient to consciousness, and abolished glycosuria and hyperglycemia.

5. The necessity of extreme caution in the use of this preparation must be emphasized.

CICATRICIAL STENOSIS OF THE ESOPHAGUS CAUSED BY COMMERCIAL LYE PREPARATIONS *

LOUIS H. CLERF, M.D.
PHILADELPHIA

Sad cases of esophageal burns from swallowing caustic alkalis continue to be seen at the Bronchoscopic Clinic, in various degrees of food and water starvation from esophageal stenosis. During the last sixteen months, twenty cases were admitted, a brief synopsis of which will be given.

REPORT OF CASES

CASE 1.—A boy, aged 3½ years, sent to the clinic by Dr. Lawrence Lee, Aug. 26, 1921, was very ill, markedly emaciated, and could swallow neither food nor water; even saliva was regurgitated. He coughed almost continuously because of the overflow of saliva into the larynx. His weight was 16 pounds, 14 ounces (about 7.7 kg.). Almost eight months before admission, the child drank of a solution of "Sterling Lye," found among other articles in a smokehouse. There was immediate dysphagia, which increased, and emaciation became extreme. Gastrostomy was done two months after the accident. On admission, Dr. F. F. Borzell, by roentgen-ray examination, found a complete atresia of the middle third of the esophagus. Esophagoscopy showed absolute atresia of the esophagus. Communication was eventually established by perforation by combined peroral and retrograde esophagoscopy. A string was carried through, and retrograde dilation performed, using the Tucker bougie. Unfortunately, the child contracted measles, complicated by a severe bronchopneumonia, which terminated fatally.

CASE 2.—A man, aged 39, was sent to the clinic because of dysphagia for solid foods. At the age of 18 months he drank from a pitcher containing a lye solution used in making soft soap. This lye was put up in a tin container; the brand was not remembered. He was very ill for about two weeks. For the last thirty-seven years he had been able to eat only soft foods and liquids. On roentgen-ray examination, Dr. W. F. Manges found three definite strictures of the esophagus. Esophagoscopy revealed the uppermost stricture. Esophagoscopic bouginage was instituted.

CASE 3.—A boy, aged 6 years, was referred, Sept. 7, 1921, by Dr. Martin J. Farrell, because of inability to swallow solid foods, and dysphagia for liquids. Five weeks before admission, the child drank from a pitcher standing on a window-sill. The pitcher contained a solution of "Red Seal Lye," which was being used to wash clothes. Roentgen-ray examination by Dr. H. K. Pancoast showed marked constriction of the esophagus. Esophagoscopy revealed active ulceration of the esophagus, beginning below the cricopharyngeus. Retrograde dilation was carried out.

CASE 4.—A youth, aged 18, was referred, Sept. 7, 1921, by Dr. J. C. DaCosta, because of aphagia of six days' duration. Ten years ago the patient swallowed some "Red Seal Lye." When admitted, he was in a serious state of water hunger. Gastrostomy was done by Dr. T. A. Shallow under local anesthesia. Roentgen-ray examination by Dr. W. F. Manges showed a complete obstruction of the esophagus. On esophagoscopy, a mucosal web stenosis of the esophagus was found. This was ruptured by the tube, and subsequent roentgen-ray study showed a practically normal esophagus. The patient was discharged well.

CASE 5.—A girl, aged 4 years, was referred, Jan. 5, 1922, by Drs. Walter Lathrop and Ira Freyman, because of difficulty in swallowing. About three months before, the child drank from a glass which contained a solution of "Red Seal Lye." Severe burning of the mouth and pharynx resulted, and she was unable to swallow any food for many days. Later, liquids could be taken only in small quantities, and these were often regurgitated. On admission, the patient showed considerable weight loss. Dr. W. F. Manges, by roentgen-ray examination, found a marked narrowing of the esophagus, which was verified by esophagoscopy. Gastrostomy was performed by Dr. T. A. Shallow, and later a string was swallowed and retrograde dilation begun.

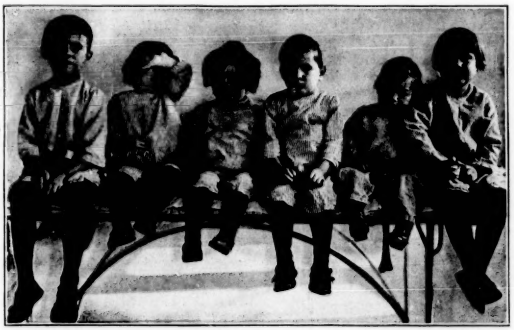


Fig. 1.—Six of the twenty children admitted to the Bronchoscopic Clinic during the last sixteen months suffering with stricture of the esophagus from swallowing caustic alkalis put up in packages for household use. In order, from left to right, the preparations accidentally swallowed were: Red Seal Lye, Red Devil Lye, Kleanall, Sterling Lye, Babbitt's Lye and Red Seal Lye. The photograph was taken some months after admission, when the children were much improved by treatment. Most of them were in a pitiable state of emaciation when admitted.

CASE 6.—A man, aged 53, came to the clinic, March 3, 1922, because of difficulty in swallowing. About thirty-one years before, he had drunk of a bottle containing a solution of home-made lye, mistaking it for a cough mixture. There was severe burning of the mouth and throat, and difficulty in swallowing solid foods was noticed. For thirty years he had eaten only liquid and semisolid foods. Roentgen-ray study by Dr. W. F. Manges revealed an irregular lumen of the esophagus, the narrowest point being in the lower third, where there was considerable constriction. Esophagoscopy verified these findings. Esophagoscopic bouginage was instituted.

CASE 7.—A girl, aged 10 years, was referred, March 9, 1922, by Drs. Ayer and Buff, because of aphagia. About twenty-two months before admission, the patient drank of a solution of "Red Seal Lye." Severe burns of the mouth and throat, with dysphagia, resulted. During October, 1921, aphagia resulted, and gastrostomy was performed. On admission, the patient was fairly well nourished, underdeveloped and unable to swallow any food. On roentgen-ray examination, Dr. W. F. Manges found practically complete obstruction of the esophagus. Esophagoscopy revealed a stenosis of the upper part of the thoracic esophagus. Following esophagoscopic bouginage, retrograde dilation was started.

CASE 8.—A boy, aged 5 years, was referred, March 27, 1922, by Dr. J. J. Reilly, because of inability to swallow solids and frequent regurgitation of liquids. About four

* From the Bronchoscopic Clinic, Jefferson Hospital.

weeks before admission, the child swallowed some liquid which produced severe burns of lips, mouth and throat. The mother stated that there was some lye in the house, but is not certain whether this was swallowed by the patient. Difficulty in swallowing resulted and became slowly worse, so that only liquids could be swallowed. There was progressive weight loss. Roentgen-ray examination by Dr. W. F. Manges showed almost complete obstruction of the upper esophagus. On esophagoscopy, a stenosis of the esophagus was found, ending in a blind fistula. Because of the emaciation and the continued failing of nutrition, gastrostomy was advised. This was done by Dr. T. A. Shallow. The patient did not react well, and subsequently died. A necropsy was not permitted.

CASE 9.—A man, aged 27, was referred, March 28, 1922, by Dr. J. A. Bertolet, because of aphagia of two days' duration. When the patient was 18 months old, he swallowed a solution of "Banner Lye." Dysphagia developed, and he was treated at the Presbyterian Hospital with marked improvement so that he could swallow liquids and soft foods. Three days before admission, some corn lodged, producing aphagia, which persisted until shortly after admission to the clinic, after which it passed spontaneously. By roentgen-ray examination, Dr. W. F. Manges found complete obstruction of the esophagus in the middle third. Its appearance indicated a foreign body. Following the spontaneous removal of the foreign body, he again studied the case and found a stenosis of the esophagus in the lower portion of the middle third. On esophagoscopy, a cicatricial stenosis of the esophagus with esophagitis was found. Esophagoscopic bouginage was instituted, with favorable results.

CASE 10.—A girl, aged 2 years, was referred by Dr. John B. Murphy, April 26, 1922, because of inability to swallow any solid foods. Successful attempts were made to treat the stricture of the esophagus, which had been diagnosed by roentgen-ray examination. The general nutrition was good. Six weeks before admission, she put some "Red Devil Lye" powder in her mouth. The lye powder had been left lying on the lid of the container. Vinegar was given immediately afterward. Slight burns of the mouth resulted. Inability to swallow solids came on immediately, and has persisted. Esophagoscopy showed ulceration of the esophagus, which was swollen apparently shut. Gastrostomy was done by Dr. T. A. Shallow, and the esophagus was put at rest for a time. Retrograde dilation was then instituted, and is still being carried out.

CASE 11.—A boy, aged 2 years, was seen at the clinic in consultation with Dr. Richmond McKinney, April 14, 1922, because of inability to swallow any food, either solid or liquid. About eight months before admission, the child had swallowed some concentrated lye, the brand unknown. Difficulty in swallowing, with the usual progressive emaciation, developed. A gastrostomy was done, as the esophagus completely closed in a short while. The roentgenologist reported a stricture at about the middle of the esophagus, which completely closed its lumen. Bouginage had been done at various times, but the lumen of the stricture could not be located. On admission, the patient was in good general condition. There was complete aphagia. On esophagoscopy, a tight stenosis was found 23 cm. from the upper teeth. No opening was found, either by inspection or by esophagoscopic bouginage. Esophagoscopic search was repeated at intervals for weeks by Dr. McKinney, who reports that eventually an opening through the atresia was established.

CASE 12.—A girl, aged 19, was sent to the clinic, May 16, 1922, by Drs. Hays and Burnett, because of dysphagia for solids. When about 4½ years of age she drank from a cup which had been used with some "Red Seal Lye." For about three years following the accident, she was unable to swallow anything but liquid foods. Then swallowing

No Soaking Beware of Imitations No Rubbing
DIRECTIONS.
For washing white clothes. Kettle and colored clothes of fast colors fill boiler one-half full of cold water; dissolve one-third of an ordinary size bar of soap and put into it; add one teaspoonful of THE FLUID. Then put clothes in boiler and if they absorb sufficient water so that it does not cover them add more water. All the clothes should be submerged in water when boiler is placed on the stove. After water begins to boil allow it to boil 20 minutes, stirring clothes occasionally during the boiling process, then remove the clothes and rinse in two waters to take out all the soap. Examine the fabrics and they will be found clean and more white, and ready to hang on the line to dry. In extreme cases, such as the neck and wristbands of shirts it may sometimes be found necessary to rub these parts slightly between the hands, but for all ordinary articles no scrubbing whatever is necessary, and no WASHBOARD is required. It will do no harm to put clothes to soak over night in clear water, but even this is unnecessary unless extremely soiled.
THE FLUID is free from lime or acids and cannot possibly injure the finest fabrics. It makes the hands soft and smooth. For the second boiler of clothes use the same water without adding more FLUID or soap, but before putting the clothes into it dip them into cold water. Dry clothes should never be put into boiling water, as it is liable to set any stains which may be on them. For house cleaning, washing floors, greasy dishes, paint, etc., pour a small quantity in water, and add a little soap. For washing windows and glass use no soap. Use strictly according to directions and THE FLUID will do the work perfectly and save much hard labor.
THE FLUID is far superior to Ammonia and much cheaper."
CONTENTS OF THIS PACKAGE MAKES TWO GALLONS OF WASHING FLUID
KLEANALL
Softens the water and has a most wonderful Cleansing and Bleaching Power, removes all Grease and Dirt and DOES NOT INJURE the finest fabric or the most Delicate Skin, if used according to directions.
PREPARED BY
KLEANALL MANUFACTURING COMPANY
HAVERHILL, MASS.
Net weight not less than 16 ounces
DIRECTIONS—Dissolve the contents of this package in two gallons of water; shake well until it is dissolved and then follow directions on bid
Form 66-Sp-11

Fig. 2.—This child swallowed a teaspoonful of Kleanall Lye, which had been left in a saucer. It was not known that this lye was poisonous, for nowhere on the label was there anything to show that it was a poison.

gradually improved, but recently she has been able to take only liquids. Dr. W. F. Manges, by roentgen-ray examination, found a marked narrowing of the lumen of the esophagus in the lower third. Esophagoscopy showed a web-stenosis of the esophagus about 3 cm. below the crossing of the left bronchus. The web was stretched and ruptured with the tube mouth. Subsequent roentgen-ray examination did not show any obstruction, and the patient was able to swallow normally.

CASE 13.—A boy, aged 3 years, was sent to the clinic by Dr. B. Bigger Best, May 25, 1922, on account of dysphagia for solid foods and beginning difficulty with liquids. Three weeks before admission, the child's mother, while using some lye (name unknown) for cleaning purposes, was called to answer the telephone. During this brief interval the child either ate some of the lye powder or drank of the lye solution. His lips and mouth were severely burned. Since the accident, he had been unable to swallow solid foods, and liquids were taken with difficulty. There had been a gradual

loss in weight, and on admission the child was very pale, undernourished and quite ill. Roentgen-ray examination by Dr. W. F. Manges showed marked narrowing of the esophageal lumen. To provide sufficient nourishment, a gastrostomy was done by Dr. T. A. Shallow. Esophagoscopy done later revealed a strictured cicatricial lumen. Retrograde dilation was instituted.

CASE 14.—A girl, aged 2 years, was referred by Dr. J. F. Baldwin, June 8, 1922, because of inability to swallow solid foods. About twelve weeks before, the child's mother was using "Banner Lye" to make soap, pouring the solution into cups. The child drank from one of the cups which, previously emptied, still contained a few drops of the solution. Severe burning of the mouth and throat resulted. Dysphagia for solids was noted immediately afterward, and a progressive difficulty in taking liquids ensued. Nutrition being seriously impaired, Dr. Baldwin did a gastrostomy. On admission, the child was in good condition generally. On roentgen-ray examination, Dr. H. K. Pancoast found a tight stricture of the upper esophagus, which was verified by esophagoscopy. After considerable perseverance, a string was passed through and retrograde dilation started.

CASE 15.—A man, aged 58, was sent to the clinic, July 15, 1922, by Dr. J. James Condran. About four weeks before admission, the patient had drunk from an unlabeled bottle in an icebox where drinking water was kept. The bottle contained a solution of caustic soda. He was profoundly shocked, and complained of intense pain in the mouth, throat and abdomen. Marked dysphagia resulted. On admission, he presented the picture of inanition and acute water starvation. No roentgen-ray examination or esophagoscopy was made. Dr. C. F. Nassau saw the patient and advised against gastrostomy, as the patient was moribund and an operation would simply hasten the end. The patient died within forty-eight hours after admission. A necropsy was not obtained.

CASE 16.—A girl, aged 22 months, referred by Dr. C. Heard, Aug. 14, 1922, was unable to swallow anything but liquid foods, and these only in small quantities. There was moderate loss of weight and a mild degree of anemia. Nine weeks before admission, while playing in the yard, the child found a can of "Babbitt's Lye" and put some of it in her mouth. There were severe burns about the mouth and lips. Progressive dysphagia ensued. A gastrostomy was done by Dr. T. A. Shallow because of aphagia. Roentgen-ray examination by Dr. M. A. Almy showed a partial stenosis of the esophagus. Esophagoscopy revealed a tight stricture about 4 cm. below the cricopharyngeus. Retrograde dilation is being carried out.

CASE 17.—A girl, aged 2½ years, was referred by the pediatric outpatient department, Sept. 6, 1922. About one year before admission, the child drank of a solution of "Red Devil Lye," and sustained severe burns of the mouth and throat. Difficulty in swallowing began two weeks afterward, and became progressively worse. On admission, the child weighed 13¼ pounds (6 kg.), could swallow no solid food, and liquids were taken with great difficulty. There was marked emaciation, with beginning water starvation. Gastrostomy was performed immediately by Dr. G. P. Mueller. Roentgen-ray examination by Dr. H. K. Pancoast showed extensive stenosis of the esophagus. Esophagoscopy revealed extensive ulceration of the upper esophagus. Retrograde dilation is being done with marked improvement, the child now weighing 28 pounds (11.8 kg.).

CASE 18.—A boy, aged 2 years, was referred, Sept. 27, 1922, by Dr. L. B. Overlock, because of inability to swallow any food, or even saliva. Three months before admission, the child drank from a cup which contained some concentrated "Babbitt's Lye." The lips, mouth and throat were severely burned. He was able to swallow liquids for about one month, after which time aphagia supervened, and gastrostomy was immediately done by Dr. Overlock. On admission, the child was in a fair state of nutrition. There was complete aphagia, saliva being regurgitated. Dr. Solis-Cohen found on roentgen-ray examination that there was complete closure of the esophagus. Esophagoscopy verified these findings. The lumen being eventually restored, retrograde dilation was started.

CASE 19.—A boy, aged 9 years, was referred by Dr. W. A. Burke, Oct. 26, 1922, because of marked loss of weight and inability to swallow anything but liquids. He was underdeveloped and poorly nourished, weighing but 36¾ pounds (16.7 kg.). There was marked anemia. When 4 years of age, he accidentally took some "Red Seal Lye" in coffee, mistaking it for sugar. He had received no treatment of any kind since the accident, and his condition was brought to the attention of the American Red Cross during the medical examination of school children in the rural schools. Dr. W. F. Manges, by roentgen-ray examination, found almost complete obstruction of the esophagus. This was verified by esophagoscopy. On account of the emaciation of the patient and his inability to swallow sufficient food to maintain his nutrition, gastrostomy was done by Dr. T. A. Shallow. Retrograde dilation will soon be instituted.

CASE 20.—A girl, aged 2 years, was sent to the clinic Nov. 4, 1922, by Dr. Charles H. Hunt, because of dysphagia for all but liquid foods. Four months before admission, she drank of a solution of "Kleanall," which had been left in a cup. Together with burns of the mouth there was dysphagia, which slowly increased, with marked loss of weight. About three months after the accident, the patient was unable to swallow even liquids; so a gastrostomy was performed immediately by Dr. Hunt. The general condition on admission was good. Roentgen-ray examination by Dr. W. F. Manges showed a marked obstruction of the upper esophagus. On esophagoscopy, marked narrowing of the esophageal lumen was found. Retrograde dilation is being done.

The treatment carried out in these cases is dilation, either by esophagoscopic bouginage in the cases without gastrostomy, or by retrograde dilation in the gastrostomized cases, using the special bougie devised by Dr. Gabriel Tucker.

COMMENT

In these cases, as in practically all cases of esophageal stenosis resulting from lye preparations, an analysis of the circumstances attending the ingestion of the alkali reveals several points of interest.

The swallowing is practically always accidental, the lye, in powder or solution, being left within reach of the child, or put on the kitchen shelf with other containers and mistaken for one of these. Sometimes it is a residue adhering to a cup which has been used to measure lye. This apparent carelessness is due to a lack of knowledge of the highly poisonous nature of all lye preparations. Since lye may be purchased anywhere, and since the labels on the containers either have no poison or warning notice, or, if present, it is usually inconspicuous, it is readily seen that education as to the poisonous nature of lye is only by bitter experience.

Viewing the matter purely in the abstract, it is difficult to understand why necessary legislation has not been provided to prevent these pathetic occurrences by adequate "scare labels," especially when, on every hand, efforts are being made to protect against disease, to safeguard against injury, and to prolong life.

Poisoning, due to the accidental swallowing of poison sold by druggists, is relatively uncommon, and this is due in great part to the profound respect inspired by the "skull and cross-bones" and "poison scare labels" which are required by legal regulations to be placed on these containers.

Similar precaution could be taken with lye preparations to warn the public of the highly poisonous nature of these substances. It would then be very properly stored in a safe place beyond the reach of these poor, innocent children. A careful presentation of this question to legislators and manufacturers from the humane side, as well as a consideration of its economic aspects,

should convince them of the necessity of remedial measures.

This is a review of a pathetic condition which is the cause of much suffering and distress to these innocent patients, who are in this state because it was not known that lye was a poison. That this disease is preventable is obvious. The essential point is that parents do not fully realize that these preparations are poisons.

THE RATIONAL TREATMENT OF FRACTURES OF THE UPPER END OF THE HUMERUS

REPORT OF END-RESULTS

JAMES WARREN SEVER, M.D.
BOSTON

In following a series of cases of fractures of the upper end of the humerus, I have been impressed by two things: (1) The fact that no textbook emphasizes the absolute necessity of the abduction treatment of this type of fracture, so far as a result expressed in terms of good function goes, and (2) the generally poor results obtained in these fractures as a result of the usual routine methods of treatment as determined by subsequent function. In this paper, I wish to impress on all those who are called on to treat these fractures that better results will be obtained in less time if traction, following reduction of the fragments, is used in the abducted and outwardly rotated and elevated position, rather than using the older and usual method which employs the shoulder cap, sling and Velpeau bandage. By the latter method, one not only insures future disability as far as good function of the shoulder goes, but primarily establishes, through bony union, false anatomic relations of the united parts. The first method of treatment is applied generally to all unimpacted cases. The cases of impacted fracture of the upper end of the humerus in old persons may be left alone or treated by the usual methods, but even better results will be obtained in the average case of impaction if the abducted, elevated and outwardly rotated position with gentle traction for at least a week is insisted on. There are certain cases in which exception may be made to this procedure, and the fracture may be treated only by a sling for the arm, with massage, baking and passive and active exercises started as early as the tenth to the fourteenth day. By this method, most patients, by the end of the fourth week, can use the arm and hand well, go without a sling, even elevate the arm above the shoulder level, and put the hand behind the head. This abduction method also prevents the subsequent condition of shoulder joint subluxation occasionally seen after fracture of the upper end of the humerus and apparently due to capsular and muscle relaxation resulting from injury and atrophy as well as gravity pull of the distal fragment, plus the occasional use of traction in the vertical direction. These subluxations and partial dislocations may clear up as the arm recovers, but may persist as a cause of considerable future functional disability.

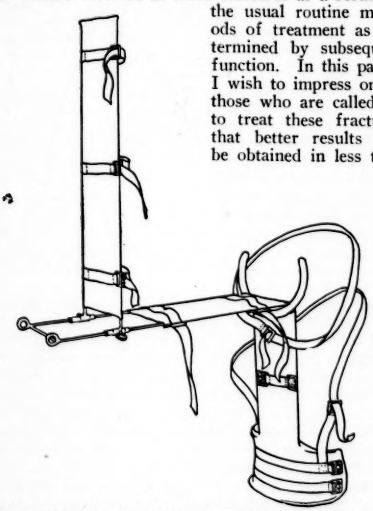


Fig. 1.—Abduction splint: There is a sliding upright for the forearm, with cross bar at end of horizontal arm for attachment of traction. The split ring at the axillary end is for fixation of the shoulder. The vertical body portion should extend from the axilla to well below the crest of the ilium, almost to the trochanter, just long enough to allow for a comfortable sitting position. It should be no wider than the width of the arm.

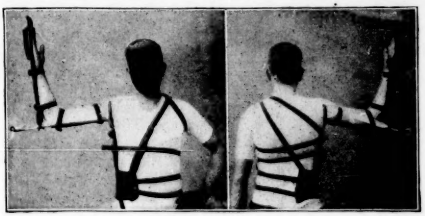


Fig. 2.—Splint applied: There is traction on the arm; the figure of eight strap round the left shoulder prevents arm and splint from riding forward.

In the study of the literature, there is little in the textbooks that calls attention to the necessity of the abducted position in the treatment of these types of fractures. A certain amount of abduction, possibly 45 degrees, is spoken of occasionally, but almost invariably in connection with inward rotation of the humerus. This, of course, is exactly what is not wanted. There are a good many arm splints, such as the Middledorp triangle, which is in the form of three narrow wooden splints made together as a frame and having its apex in the axilla. This, of course, is the ancestor of the Penhallow-Osgood splint, but does not hold the arm either in sufficient abduction or outward rotation. The so-called Red Cross basic splint, an abduction arm splint, is crude; and while it might be used to advantage temporarily in an emergency in war work, it is not an efficient splint for ordinary civil practice. Nor does it hold the arm in outward rotation. Judet [1] has used abduction with plaster casts, but only to 45 degrees; and Schuller [2] has used the angle wire bandage reinforced with sodium silicate, both holding the arm in inward rotation.

Most of the authors apparently think a wedge-shaped pad in the axilla and a shoulder cap of plaster of Paris will answer every purpose. This, of course,

1. Judet: Presse méd., Jan. 6, 1907.
2. Schuller: Arch. Orthop. **2**: 58, 1904.

is not a satisfactory method either in view of the results we have been getting or in regard to proper anatomic relation. Royster [3] believes that the old and accepted type of treatment is satisfactory and that in the case of dislocation with fracture, an immediate operation is necessary to replace the fragments; but he lays no emphasis on the essential position of abduction and outward rotation, following reduction.

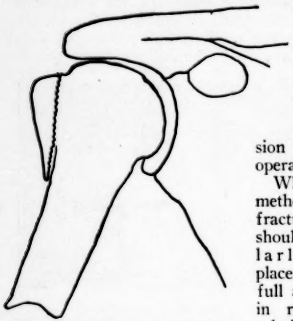


Fig. 3 (Class 1).—Fracture of greater tuberosity of humerus: Patient was not treated by abduction and outward rotation, but by shoulder cap and sling; accident happened in August, 1922, and patient still has considerable disability.

Buchanan [4] reports a number of cases of fracture of the humerus and dislocation of the head, discusses mechanics, and thinks excision of the head the operation of choice.

Whitman [5] describes methods of reducing fractures about the shoulder joint, particularly epiphyseal displacements, and believes full abduction essential in restoring anatomic relations. After replacement of the fractured surfaces, the arm is dressed in abduction, but carried forward in inward rotation and held in a shoulder spica. This is to my mind satisfactory only so far as it goes, and is much better than the old method of keeping the arm strapped to the side.

Albee [6] has described a new postural treatment, emphasizing the necessity of restoring the fractured surfaces by means of traction temporarily, but the arm, after the surfaces are apparently in approximation, is dressed in a plaster spica holding the arm markedly inwardly rotated and carried forward so that the humerus is almost parallel to the sagittal plane.

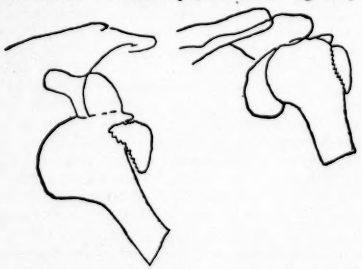


Fig. 4 (Class 1 A).—Fracture dislocation of shoulder before and after reduction. Fracture of greater tuberosity of humerus.

He states that the first mention that he was able to find of reduction of this type of fracture was by E. M. Moore of Rochester, N. Y., in 1874. He states that Moore, after restoring the fractured surfaces, found great difficulty in retaining the corrected position when he brought the arm down to the side of the thorax for fixation. He also states that, in 1902, Beck, and Whitman previously quoted, described successful results from fixing the arm in a position of lateral abduction. If lateral abduction, such as Albee and Whitman describe, is that shown by the illustrations, it certainly is not anatomically correct from the point of view of later function.

Jorge [7] felt that the arm should be immobilized in slight inward rotation in a plaster cast after reduction. He believes that lack of proper correction is certain to entail serious consequences. Massage, however, with passive exercises, he thinks should be begun as early as the second week. In this I agree with him.

Robert Jones [8] feels that the abducted position is the best position when it has become necessary to correct extreme deformity by operation. He does not feel, however, that passive motion should be begun before the fourth week.

Henderson [9] states that, as a result of a study of a number of cases of injury to the shoulder joint, he finds that the motion most often complained of by the patient is that of upward and outward rotation and elevation; also that failure to obtain this motion is due to the fact that not only arthritic changes occur in the joint but also callous production resulting from fracture tends to obstruct these two motions.

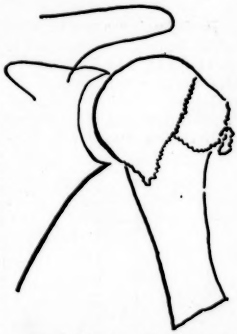


Fig. 5 (Class 2).—The patient fell on the left shoulder July 20, 1920. Fracture resulted, with splitting off of the greater tuberosity. Oct. 1, 1920, there was good union, and good motion except in elevation. In March, 1922, shoulder motions were all normal.

Van Hook [10] states that it is his belief that in cases in which there has been a fracture dislocation of the head of the humerus, it is better to use the Murphy fat and fascia transplant to insure later motion, and believes that removal of the fragments of the humeral head after simple fracture with dislocation of the head gives an excellent result after operation, provided muscular attachments are reestablished. He quotes Hennequin and Loewy,[11] who state that intracapsular as well as extracapsular fractures at the shoulder heal in comparison with similar fractures of the hip joint, but full recovery cannot take place in those fractures occurring in persons beyond middle age in less than six months or a year, or at all unless reduction of the fracture is absolutely complete.

Helfrich [12] says nothing about abduction methods of treatment of this type of fracture.

MECHANICS OF THE FRACTURES

These fractures are generally caused by a fall, the patient's arm being held in a position of abduction,

3. Royster, H. A.: The Management of Dislocation at the Shoulder Joint Complicated by Fracture of the Neck of the Humerus, J. A. M. A. **49**: (Aug. 10) 1907.
4. Buchanan, J. B.: Ann. Surg., May, 1908.
5. Whitman, Royal: Ann. Surg., May, 1908.
6. Albee, F. H.: Juxta-Epiphyseal Fracture of the Upper End of the Humerus, M. Rec., May 4, 1912.
7. Jorge, J. M.: Semana Med., July 18, 1912.
8. Jones, Robert: Brit. M. J., Dec. 7, 1912.
9. Henderson, F. F.: Dislocations of the Shoulder, with a Few Complications, Boston M. & S. J. **177**: 550 (Oct. 18) 1917.
10. Van Hook, Weller: Fracture Dislocations of the Humeral Head, Boston M. & S. J. **187**: 960 (Dec. 28) 1922.
11. Hennequin and Loewy: Les fractures des os longs, 1904.
12. Helfrich: Atlas of Fractures and Dislocations, Munich, 1910.

hand pronated and humerus inwardly rotated. As a result of this position, the tuberosity of the humerus comes forcibly into contact with the tip of the acromion. It follows, then, that (1) the tuberosity is broken off; (2) a fracture of the neck of the humerus occurs; (3) a dislocation of the humerus occurs, or (4) a combination of the various preceding conditions results.

In fractures alone of the greater tuberosity, there are two main types: One in which there is merely a crack running through the base of the tuberosity, and one in which the tuberosity as a whole is pulled forcibly off and rotated backward and outward. The latter condition is due to the pull of the supraspinatus, infraspinatus and teres minor muscles. Any attempt to reduce this fracture in any position other than outward rotation, elevation and abduction of the humerus will, of course, fail. Not infrequently, this type of fracture may be complicated by a fracture of the surgical neck, an impaction of the head and shaft, or a dislocation.

In fractures of the neck of the humerus in young people before the epiphysis has united, it is not uncommon to see the entire epiphysis displaced. This displacement may be partial or complete. The entire head of the shaft is not infrequently rotated upward and backward, but often it is in a position of sub-

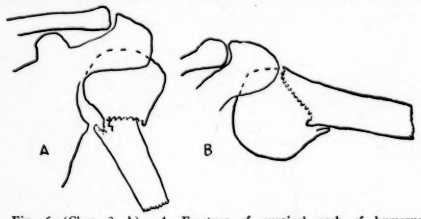


Fig. 6 (Class 2 A).—*A*, Fracture of surgical neck of humerus in position assumed after ordinary Velpeau dressing and shoulder cap; *B*, position after abduction and outward rotation: almost perfect anatomic restoration of fragments.

coracoid dislocation and upside down. The mechanics of the injury is the same in these cases as in the fractures of the greater tuberosity, but has had the added force of the body weight applied to the shaft through the acromion acting as the fulcrum with the arm abducted. In the latter cases the parts may occasionally be manipulated into position, but more often operation has to be performed and the fragments replaced, or, in adults, the articular head of bone removed. Frequent manipulative attempts should not be encouraged for fear of damage to the axillary vessels and nerves. Associated with this type of fracture is always the inward rotation of the distal fragment consisting of the shaft of the humerus. This inward rotation is due to the unopposed pull of the pectoralis major, latissimus and teres major. There may also be some upward displacement of the lower fragment, due to the unopposed pull of the triceps, biceps and coracobrachialis. All these perverted muscle pulls have to be taken into consideration and corrected before any adequate anatomic reposition may be accomplished.

The severer types of these fractures are associated with capsular tears and exudates into the joint, and so add to the subsequent disability greatly. Early motion after reduction is as much an essential to a satisfactory result as a primarily correct anatomic reposition, in spite of the fact that Sir Robert Jones states that no passive motion should be attempted before the fourth week. The results one sees in these cases treated by routine methods are bad. That is, motions are always limited in abduction, outward rotation and elevation, with little or no ability to put the hand behind the head for a long time—eight to ten months, if ever. Early traction in abduction and outward rotation, with right angle elevation, would give the patient a base from which to start these motions and would ultimately lead to a vast improvement in our results.

One principal difficulty later in effecting outward rotation and abduction and elevation after this type of injury and following the old method of treatment is that new bone or exuberant callus blocks the sliding of the greater tuberosity under the acromion. With the arm in the primary position of outward rotation, abduction and elevation no such blocking callus can form, and the principal difficulty to later function is at once prevented.

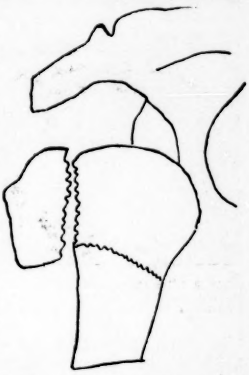


Fig. 7 (Class 2 B).—Fracture of greater tuberosity, surgical neck and dislocation of the humerus from the glenoid. Seven years after the accident, this woman still has considerable disability in elevation and outward rotation of arm. She was treated by the usual routine method.

METHODS OF APPLYING TRACTION

There are several methods of applying traction to the humerus following manipulative or operative reduction of the fracture. All of the ambulatory splints on the market at present are inefficient, not so much from the point of view of traction, but from the fact that the humerus is always held in inward rotation and generally in a plane forward of the shoulder joint. Inward rotation of the humerus is just what is not wanted, and so they fail to furnish a

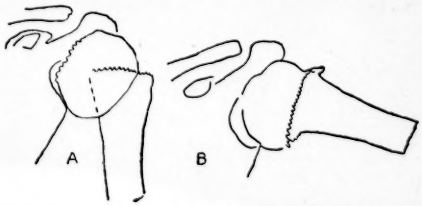


Fig. 8 (Class 2 A).—*A*, fracture of surgical neck, with complete rotation of head; *B*, replacement of fracture as result of manipulation followed by external rotation, abduction and traction, which was continued for about three weeks; after the omission of traction, the patient was massaged for about four months, and two years later she had perfectly normal motion and no shortening.

satisfactory supporting or anatomic position. Following a fracture of the upper end of the humerus which has been reduced by manipulation under ether, the traction may be applied to the arm in the usual manner, that is, two long side pieces of surgeon's plaster parallel to the long axis of the arm and the figure of eight

spiral pieces. If the patient is to stay in bed, an ordinary arm Thomas splint may be used and so fastened to the head of the bed with a bandage as to prevent dropping of the arm below the shoulder level. Its outer end may be supported on a bedside table or slung from an overhead support.

Care should be taken in these cases not to extend the sticking plaster below the elbow, as too much or too

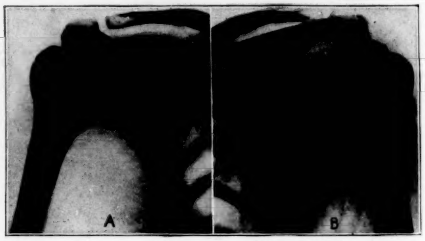


Fig. 9 (Class 2 A).—*A*, condition of fractured left shoulder in the case illustrated in Figure 9, two years after the accident; virtually no difference from normal right shoulder, *B*.

long continued traction, or even sufficient traction to hold the fracture in adequate position and overcome muscle pull, may be enough to start up an arthritis or periarthritis of the elbow which will prove very troublesome for a long period of time. It is better to have the elbow flexed and the hand supinated with all the pull coming on the upper arm. If the lower arm is incorporated in a plaster cast with the elbow bent, the cast going a few inches above the elbow, traction can be made on the cast in the bend of the elbow without danger and with excellent control of the traction and rotation. Care should also be exercised to prevent overtension on the nerves of the arm, which may lead to temporary paralysis of the hand or lower arm.

From ten days to two weeks is a sufficiently long time to insure enough union so that the patient may be allowed up and about with an ambulatory splint which maintains the corrected primary position. This splint can be applied in all simple cases of impaction

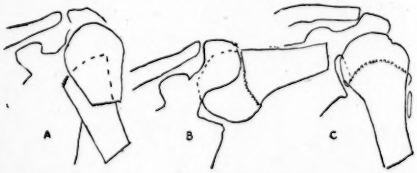


Fig. 10 (Class 2 A).—*A*, fractured surgical neck, with considerable overriding of fragments; *B*, replacement of fragment, with arm abducted and outwardly rotated about a week after injury; *C*, condition of arm after abducted and outwardly rotated position had been given up two months later. This man, however, had to have the arm operated on in order to replace the fragments, and a cast was applied in the abducted and outwardly rotated position. This cast he wore for a month or six weeks. He enlisted in the navy and was drowned in New York Harbor, Oct. 6, 1921. The arm up to that time seemed normal, four years after the fracture.

from the first, but the patient is more comfortable and safer in bed in the more severe types of fractures the first week or two, especially those which have required manipulative or operative reduction.

CONSTRUCTION OF SPLINT

This splint is modified somewhat from one which has been used extensively in a more simple form for the treatment of cases of obstetric paralysis. With the addition of extra room at the elbow for traction and a split ring at the shoulder for security, it offers a very

Classification of Fractures of Upper End of Humerus

Class 1.—Simple fracture of greater tuberosity without displacement; *A*, with upward and outward rotation of fragment, may be associated with dislocation of shoulder.

Class 2.—Simple fracture of surgical or anatomic neck without displacement, or with impaction of fragment; *A*, with displacement of fragment, but without dislocation of head; *B*, with displacement of fragments and complete dislocation of head, generally subcoracoid.

Class 3.—Fracture of neck of humerus, generally comminuted, with fracture of shaft, without dislocation of head.

adequate apparatus for the ambulatory treatment of these fractures. It is made of copper washed iron wire of one-fourth inch gage and can be readily adjusted to fit any individual case by any one (Fig. 1).

EXAMPLES OF DIFFERENT CLASSES OF FRACTURES

CLASS 1.—*Simple fracture of the greater tuberosity without displacement.* This injury consists of a line of fracture running parallel to the long axis of the

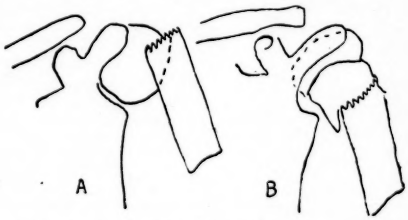


Fig. 11 (Class 2 A).—Left arm: *A*, fracture of surgical neck or epiphyseal separation, Dec. 27, 1915; rotation of head, with overriding of distal fragment; *B*, replacement following manipulation; traction was applied with arm abducted, and was continued for a month; then a sling was used, and massage and baking were employed for several weeks. This case is further illustrated in Figure 12.

humerus, and simply separating wholly or in part a portion of the greater tuberosity from the head. It is a very common injury and should be treated by the advocated method of external rotation, traction and abduction. Treatment in this position for a few days or a week can then be followed by a sling and passive and active motion (Fig. 3).

CLASS 1 A.—*More extensive injury, in which the greater tuberosity is split off and rotated upward, backward and outward.* By outward rotation, elevation and abduction, the fractured surfaces can generally be approximated. Operation is rarely indicated, not for removal of fragment, but to restore the fractured surfaces to their normal relations. Plating or bone pegging for this condition should be discouraged in all but the exceptional case.

Dislocation of the shoulder may also be present with this class of injury, and, following the reduction of the dislocation, the treatment may be carried out in the usual way, with the caution that baking, massage and passive and active motion be started not later than the end of the first week (Fig. 4).

CLASS 2.—*Simple fracture of surgical or anatomic neck without displacement, or with an impaction of fragments, and with or without a fracture of the greater tuberosity* (Fig. 5). This case represented a fracture which had been treated as a contusion for three weeks before being roentgenographed, and followed a fall on the shoulder. Massage and exercises were started at once following the roentgen-ray examination, but it was several months before even good function was restored. There was no opportunity in this case to use any other than the conventional sling method of treatment. The roentgenogram shows a fracture of the greater tuberosity as well as a fracture of the surgical neck with displacement and overriding of the fragments, and really represents Class 2 A of our classification. The functional result was eventually perfect. Figure 6 *A* also illustrates a case of Class 2 A, which had been dressed with a shoulder cap and Velpeau bandage. Twenty-four hours later, under gas, manipulation, followed by traction, abduction, and outward rotation, the result illustrated in Figure 6 *B* was obtained. A good result was obtained anatomically and functionally.

Fig. 12 (Class 2 A).—The patient whose injury was illustrated in Figure 11 reported for observation seven years later, at which time she had absolutely perfect motion. The left arm (*A*), which was fractured, and the right arm (*B*), which was normal, are very nearly identical.

Class 2 B is shown in Figure 7, representing a fracture of the greater tuberosity, with a subcoracoid dislocation of the head and a fracture of the surgical neck. This was in a woman, aged 60, who, following reduction of the dislocation, had fixation for several weeks, and then massage for six months. She wrote in February, 1922, that she had very good use of the arm, but still had some trouble in getting her hand to her head to comb her hair. I venture to state that with traction, elevation and outward rotation, her anatomic and functional result would have been better and the time saved considerable.

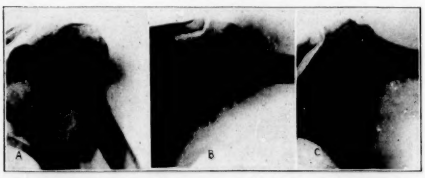


Fig. 13 (Class 2 A).—*A*, left shoulder before reduction: fracture of surgical neck, with overriding and rotation of articular surface; *B*, after manipulative reduction; traction with Thomas splint, abduction and outward rotation; *C*, three weeks after reduction; anatomic restoration of fractured surfaces, with good joint motion. In January, 1923, there was a moderate amount of limitation of outward rotation and abduction, with some limitation of elevation of arm at shoulder. This is probably due to the fact that this case was complicated by considerable arthritis of the elbow joint as a result of traction, and also by the fact that motion was not instituted early enough. Anatomically, the arm is perfect. Functionally, it is not yet satisfactory.

Other roentgenograms in Class 2 A are as follows: Figures 8 and 9 represent a case of epiphyseal separation in a girl, aged 17 years. The fracture was the result of a fall on the ice in January, 1919. Figure 8 shows the condition before and after manipulative reduction. Figure 9 shows for comparison the left shoulder, which had been fractured, and the normal right shoulder two years later. At that time there was no disability, atrophy or shortening. The case was treated by traction in abduction and outward rotation, following reduction, for a period of about three weeks.

The other roentgenograms of Class 2 carry their own legends and tell their own story.

Figure 18 represents the more severe type of fracture dislocation, about which certain individuals differ in their advised procedures. Some advocate removal of the head at once (Buchanan); others advise replacement of the head to its normal position (Royster), with suture if necessary, and still others advise not only removal of the head, but covering the ends of the distal fragment with a muscle flap to improve later function. Obviously, when the head has been displaced for any appreciable time, it should be removed. Also, when there has been much comminution of the upper end of the distal fragment, it should be removed. In certain cases, in which the patient is operated on at once, under favorable conditions it might be replaced

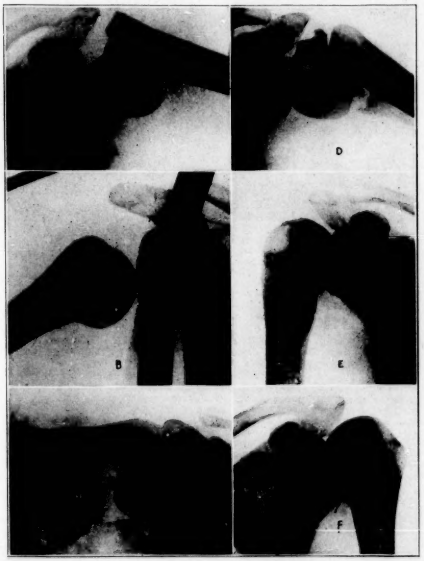


Fig. 14 (Class 2 A).—*A*, fracture of surgical neck, with overriding of fragments but with no complete dislocation of head; *B*, traction applied with Thomas splint; still slight overriding, but marked improvement in position; *C*, fragments have slipped as a result of traction having given way, with increased deformity and increased rotation of head of humerus; *D*, three months later, after operative attempt to restore position of fragments; *E*, right arm a year after injury. There has been complete restoration of normal motion and strength, and while there is some anatomic change in shape, there is no impairment of function; *F*, normal left shoulder.

with a fair chance of good function. Too long a delay would probably lead to death of the articular head, sequestration, and later secondary removal. Function after removal of the head is always impaired, but the usefulness of the arm is never as bad as one might suppose. In this case, with the extensive comminution of the distal fragment, it was obviously impossible to replace the articular head, and it was removed. The arm was put up in a Thomas splint, with a cast about the elbow, in abduction, outward rotation, elevation and supination. Traction on the cast was continued for two weeks, and then a sling was applied and active and passive motion started. Five months later, fair function was present even without any very active after-treatment.

CLASS 3.—*Fracture of the head of the humerus, generally comminuted, with fracture of the shaft, without dislocation of head.* This class of fracture is not as common as the two previous classes and usually is the

Figure 15

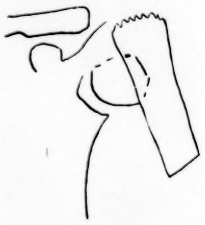


Figure 16

Fig. 15 (Class 2 A).—Fracture of left surgical neck of humerus, with splitting of shaft and overriding of fragments; also fracture of tip of acromion. Accident occurred in February, 1918. Treated by abduction, outward rotation and traction, and patient reported in May, 1922, that his left arm was in as good condition, so far as he was aware, as it ever was. He could move it in any direction without discomfort.

Fig. 16 (Class 2 A).—Fracture and separation of epiphysis, with complete tipping upside down of head of humerus with considerable overriding of the fragments. Operation was performed in November, 1919; the lower fragment was found in front of the head of the humerus; the head was replaced and fastened with kangaroo tendon: traction abduction and outward rotation were applied for several weeks. The patient was discharged from the hospital, Dec. 11, 1919. Feb. 1, 1922, motion was perfect in all directions; there was some atrophy of the left deltoid, with no shortening of the arm. This case is further illustrated in Figure 17.

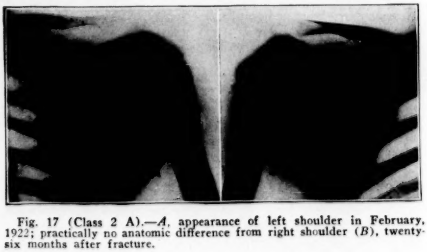


Fig. 17 (Class 2 A).—*A*, appearance of left shoulder in February, 1922; practically no anatomic difference from right shoulder (*B*), twenty-six months after fracture.

result of more forcible trauma. Coaptation splints must be used on the shaft of the humerus, and traction in abduction and outward rotation may be employed if it is found that the opposing pull of the pectoralis major does not distort the fragments of the shaft. The treatment otherwise is to be carried out as in the two previous classes, with passive motion, however, started later, about the third week.

CONCLUSIONS

These points are essential in the treatment of fractures of the upper end of the humerus:

1. Anatomic restoration of fragments is best obtained by abduction, outward rotation and elevation of the humerus.

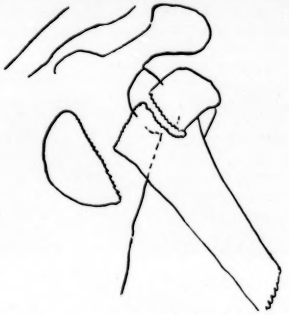


Fig. 18 (Class 2 B).—Fracture, with dislocation and displacement of left humeral head; fracture through shaft of humerus and splitting off of greater tuberosity. Humeral head removed, and arm put up in abduction, outward rotation and traction for two weeks; end-result not yet known; no muscle flap used in joint.

2. Traction in this position is essential for from four or five days to two or three weeks.

3. A satisfactory ambulatory splint may be employed rather than bed treatment.

4. Better and more quickly obtained functional results may be secured by this method than by any other.

5. Operation, except in certain cases of fracture dislocations, is generally unnecessary to restore fractured surfaces.

321 Dartmouth Street.

A MILK-BORNE EPIDEMIC OF SEPTIC SORE THROAT IN PORTLAND, OREGON *

R. L. BENSON, M.D.
AND
H. J. SEARS, PH.D.
PORTLAND, ORE.

The epidemic here reported, which includes 487 cases of septic sore throat, with twenty-two deaths, occurred almost exclusively among the customers of a single raw-milk dairy. All but one of the patients who died had drunk this milk. Prompt detection of the cause of the epidemic and equally prompt control of the milk supply by heating were made possible by complete cooperation between the clinicians, the city health bureau and the dairy management, and resulted in checking further extension of the epidemic within twenty-four hours after the suspicion of a milk-borne epidemic was first brought to the attention of the health bureau, March 27, 1922.

HISTORY OF THE OUTBREAK

A child, aged 2 years, died, March 25, 1922, with the clinical picture of sore throat and acute encephalitis. Other cases occurred in various parts of the west side

* From the departments of pathology and bacteriology, University of Oregon Medical School, and the City Health Bureau, Portland, Ore.

of Portland on this day and the next two days, all evidently referable to the milk of a single dairy. Several cases appeared in a forty-bed hospital and many in a home for girls, but it was asserted that the latter institution obtained its milk from a different source—a certain pasteurizing dairy. The city health bureau authorized us to undertake an investigation, and on the morning of March 28, it was easily determined that the girls' home, the hospital referred to above and a predominance of the cases in homes owed their infection to a single raw-milk dairy. On our recommendation, the health bureau at once ordered heating of all the milk of this dairy by whatever method would be feasible, and placed two employes of the bureau in charge of operations at the dairy. Within twenty-four hours after this plan was put in operation, the incidence of new cases of septic sore throat declined to such an extent that the very few which appeared could be ascribed to contact infection. A more detailed study of the epidemic brought out the facts which follow.

CONDITIONS AT THE DAIRY

We found fifty-one milking cows of various breeds, well housed in a wooden structure with concrete floors and with proper facilities for flushing floors and handling excreta. The system of cooling milk appeared efficient. We learned that cows having diseased udders were kept in their regular stalls along with healthy cows, and in some instances only the diseased quarter was excluded from the milking. This condition, together with the fact that milkers did not always handle the same shift of cows, but sometimes exchanged shifts, would make it possible for a milker to include milk which should be discarded. Except for the points mentioned, we found the sanitary conditions generally good, and the city milk inspection had always given this dairy one of the best ratings in the city as regarded bacterial count and general quality of the milk.

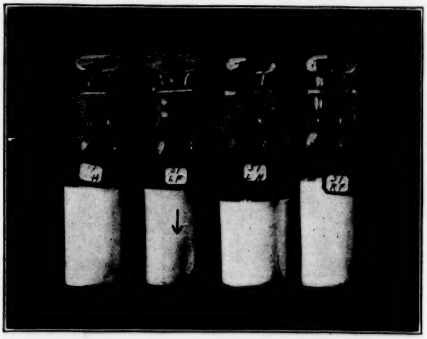


Fig. 1.—Milk samples from each quarter of Cow 51 after standing twenty-four hours. The arrow indicates the upper line of pus, which has settled out in the sample from the consolidated quarter.

CULTURES OF MILK SAMPLES

Cultures of the whole milk of the herd were taken, March 28, and gave a very few hemolytic streptococcus colonies. At this time, however, the whole milk did not include the milk of cows which were known to have diseased udders.

More instructive are the results of culture of the individual milk of each cow, and it is best to consider some of these separately.

Cow 1 had a large abscess on one hind leg, but its milk had been included with that of the herd. Cultures revealed *Streptococcus viridans* in the abscess pus and no unusual flora in the milk; nevertheless, we excluded this animal from the herd.

Fig. 2.—Udder of Cow 51, left front quarter, which yielded hemolytic streptococcus of human type: *M*, massive consolidation. Reduced to one-fourth natural size from drawing.)

Cow 51 had a consolidation of the left front quarter of the udder. The dairyman insisted that the milk of this animal had not been included in the whole milk for two weeks. Examination of the milks from separate quarters showed all of normal gross appearance except that from the left front quarter, which sample appeared grayish and mucinous. On standing twenty-four hours this milk settled out differently from that of the other quarters (Fig. 1). The lower half of the milk column consisted of yellowish, creamy pus, containing numerous pus cells and many streptococci in chains. Cultures revealed 10,000,000 hemolytic streptococci per cubic centimeter in the milk from this quarter, a few in the left rear quarter, and none in the other two quarters. It will be shown farther on that this cow, whose milk gave a pure growth of hemolytic streptococcus of human origin, was the probable source of the epidemic, perhaps from being milked into the herd milk unknown to the operator of the dairy. We learned afterward that this cow, which had a markedly increased temperature, had been kept in the same row of stalls as other cows which were furnishing milk. We shot her, April 9, and performed necropsy. The only noteworthy change was an almost complete purulent consolidation of the left front quarter of the udder, and slight infiltration in the left hind quarter (Fig. 2).

Cow 21 had had no increase of temperature reported, and had been milked in with the herd previous to the onset of the epidemic. Culture of her milk gave an abundant growth of hemolytic streptococci, which, as shown below, was of the bovine type. It was considered advisable to kill this cow also. Necropsy showed a purulent infiltration of the udder (Fig. 3).

The milk samples from four other cows yielded hemolytic streptococci in small numbers. A comparative study of the hemolytic streptococcus cultures isolated from these six cows is given in Table 1.

About three weeks after the whole herd was examined, eight cows which either had diseased udders or had gone dry in one or more quarters were examined, but no hemolytic streptococci were found.

From the data of Table 1 it will be seen that the culture from the diseased quarter of Cow 51 is the only culture isolated from the entire herd which seems to resemble in essential qualities the organism found in

the human cases of septic sore throat. All other cow strains differ markedly from the human strains in cultural characteristics and, following the method of Avery and Cullen,[1] their high limiting H ion concentrations in glucose broth identify them definitely as of bovine origin. Culture 51 L F from Cow 51 is, on the other hand, in this respect a human strain. The virulence of this culture for rabbits and white mice was also similar in every way to that of the human strain.

Fig. 3.—Portion of udder of Cow 21, which yielded hemolytic streptococcus of bovine type: *M*, consolidated area, very similar to that in Cow 51. (Reduced to one-fourth natural size.)

CULTURES FROM THE DAIRY EMPLOYEES

The one hemolytic streptococcus culture isolated from the dairy employees was from the throat of a milker who had large, red, inflamed tonsils, and who had complained of a mild sore throat. This culture could not be distinguished in any way from those isolated from the patients with sore throat and from the diseased quarter of Cow 51. It had a p_H value of 5.3, and a serum prepared against it definitely agglutinated strain 51 L F, though, on account of a propensity to spontaneous agglutination which could not be overcome, this serum could not be shown to agglutinate its own specific strain.

CULTURES FROM THE DAIRY EMPLOYEES

The hemolytic streptococcus isolated from patients was similar in all respects to the organism commonly described as the incitant of this disease. On horse blood agar plates, well isolated colonies were from 0.5 to 1 mm. in diameter, were of a whitish, watery appearance, and were surrounded by a perfectly transparent zone of hemolysis having a diameter from two to four times that of the colony. The characteristics of the colony placed the organism definitely in the beta group of Smith and Brown.[2] Growth in infusion broth was generally of the flaky type, and accumulated on the sides and bottom of the tube, leaving the medium quite clear. All cultures fermented lactose, salicin and maltose, and failed to attack mannite and inulin. The majority of cultures were incapable of attacking saccharose, but there were a few exceptions. Litmus milk was acidified slowly, as a rule, and was not coagulated in any case in seven days. No tendency to a reduction of the litmus was observed in any milk culture. The limiting H ion concentration in glucose broth fell within the limits of p_H 5.4 and p_H 5.2.

The virulence of the cultures for rabbits was low, several animals failing to die from intravenous injections of as high as 1 c.c. of a twenty-four hour broth culture. Frequently the organisms could be isolated from the blood of the animal after several days, but would subsequently disappear from the blood stream, and necropsy would reveal either kidney and liver abscesses, or joint infections or both. White mice regularly succumbed to intraperitoneal injections in about two days, with a generalized bacteremia.

CONCLUSIONS FROM EXAMINATION OF VARIOUS CULTURES

It has been stated that all hemolytic streptococcus cultures from the throats of patients with septic sore throat in this epidemic had (in glucose broth) a limiting H ion concentration between the limits of p_H 5.4 and p_H 5.2. Of the various samples of cow's milk examined, only one, that from the left front quarter of Cow 51, gave a hemolytic streptococcus culture whose limiting H ion concentration fell within the same limits; viz., p_H 5.2. The p_H for all other milk samples, including even that from the left hind quarter of Cow 51, fell within the limits of from 4.5 to 4.3, indicating a bovine origin for the organisms. We have shown that one milker had a tonsillitis of marked degree, which yielded a hemolytic streptococcus having a p_H value of 5.3, and agreeing in all respects with cultures from patients with sore throat and from the left front quarter of Cow 51. The presumption, therefore, is that the milker in question was responsible for the infection of this cow's udder; that she developed a mastitis of human streptococcic origin in one quarter, and that her milk, which was proved to contain 10 million hemolytic streptococci per cubic centimeter, was at some time included by mistake in the whole milk of the herd. Such a massed infection of the dairy milk supply accounts logically for the sudden outbreak of a highly virulent epidemic like the one here described. By a comparison of the dates at which several patients in a hospital drank the milk, it was concluded that the herd milk must have become infected on one particular day, March 22, or perhaps on two successive days. This agrees well with the time of onset of the majority of cases, as gathered by the survey of the dairy route.

TABLE 1.—*Comparison of Six Hemolytic Streptococcus Cultures from Cows*

Culture	Lactose	Mannite	Salicin	Maltose	Saccharose	Litmus Milk*	p_H
51 L F †	+	—	+	+	—	A	5.2
51 L H	+	—	+	+	+	ACR	4.3
21	+	—	+	+	+	ACR	4.5
3	+	+	+	+	+	ACR	4.5
17‡	+	+	+				
23‡	+	+	+				

* A, acid; C, coagulation; R, reduction of litmus.
† L F and L H refer to the left front and left hind quarters, respectively.
‡ These cultures were lost; therefore the data in regard to them are incomplete.

STATISTICS OF THE EPIDEMIC

In order to obtain as thorough and accurate information as possible concerning the extent and character of the epidemic, one of us made a complete canvass of the dairy route in the company of the regular driver

1. Avery, O. T., and Cullen, G. E.: J. Exper. Med. **29**: 215 (Feb.) 1919.
2. Smith and Brown: J. M. Res. **31**: 455, 1915.

of the milk wagon. The accompanying map (Fig. 4) gives an idea of the distribution of the customers, and hence of the cases.

The dairy supplied 300 families, including 1,200 individuals; one hospital containing thirty-five patients and thirty-four attendants and help, a total of sixty-nine; a girls' home containing 104 adults, and a small grocery depot which kept no milk book, but which

TABLE 2.—*Deaths from Septic Sore Throat*

Case	Sex*	Age, Years	Date of Death	Date of Onset	Contributing Causes of Death
1	♂	2	3/25/22	3/24/22	Acute encephalitis
2	♀	1	3/27/22	3/25/22	Peritonitis
3	♀	86	3/29/22	3/24/22	Myocarditis
4	♂	66	3/30/22	3/24/22	Myocarditis; double pneumonia
5†	♂	59	3/30/22	3/26/22	Cardiorenal disease; decompensation
6	♀	79	3/31/22	3/24/22	Erysipelas
7	♀	8	3/31/22	3/25/22	Septicemia
8	♂	18 mo.	3/31/22	3/25/22	Peritonitis; septicemia
9	♂	11 mo.	3/31/22	3/25/22	Peritonitis; erysipelas, slight; bronchopneumonia; encephalitis; septicemia
10†	♂	34	3/31/22	3/24/22	Hemolytic streptococcus septicemia; laryngitis
11	♂	10 mo.	4/ 1/22	3/25/22	Peritonitis; septicemia
12	♀	8	4/ 1/22	3/26/22	Tonsillitis; appendicitis
13	♀	52	4/ 1/22	.....	Septic myocarditis; septic cholecystitis
14	♂	27	4/ 2/22	3/27/22	Myocarditis
15†	♀	66	4/ 2/22	.....	Encephalitis; septicemia; endocarditis
16	♀	40	4/ 5/22	.....	Erysipelas
17	♀	35	4/ 5/22	3/27/22	Pleurisy; erysipelas; pneumonia
18	♂	2	4/ 8/22	3/24/22	Peritonitis
19	♂	72	4/ 8/22	.....	Septicemia; multiple arthritis; bronchopneumonia
20‡	♂	47	4/12/22	3/29/22	Central pneumonia
21	♂	1	4/12/22	3/26/22	Pneumonia; erysipelas
22	♀	52	4/24/22	3/26/22	Streptococcus septicemia; toxic goiter; erysipelas; goiter heart; acute nephritis

* In this column, ♂ indicates male; ♀ female.
† Necropsy.
‡ This is the only septic sore throat death in a nonuser of milk from the dairy mentioned in this report.

supplied an indefinite small number of customers. At least 1,400 persons were using the milk and cream.

The total number of cases of septic sore throat arising on this milk route during the week from March 24 to March 31 is computed at 487. Of these, 166 were severe, i. e., either had serious complications or gave trouble from protracted sepsis; 321 were listed as moderate or mild cases. Twenty-three cases, with three deaths, occurred among sixty-nine users of the milk in the hospital; forty-five cases, without fatalities, among 104 users in the girls' home. The remainder of the cases were in private homes. Four known cases arose among those who obtained this milk through the small grocery agency. Several persons who were not customers of the dairy became infected by drinking the milk in the homes of regular customers, and two deaths are included in this category.

There were twenty-two deaths in the epidemic, twenty-one of these among users of milk from the dairy in question. This gives a mortality rate of 4⅓ per cent. of those affected. Three of the fatalities were in patients who were already ill in the hospital with some preexisting condition when the epidemic started. Several others were in senile individuals. Table 2 gives the main facts concerning deaths in this series.

Necropsies were performed in three of the fatal cases, and the anatomic diagnoses were as follows:

CASE 5.—Acute pharyngitis, laryngitis, and cervical lymphadenitis; acute tracheitis and bronchitis, with early confluent bronchopneumonia of right lung; moderate bilateral pleural effusion; serofibrinous peritonitis with moderate ascites; slight serofibrinous pericarditis; marked hypertrophy and dilatation of both sides of the heart in the presence of marked arteriosclerotic narrowing of the left coronary artery; marked arteriosclerosis of the aorta and the kidneys; chronic passive hyperemia of the liver; large, fresh infarction of the spleen; cholelithiasis; encapsulated pulmonary tuberculosis.

CASE 10.—Acute purulent peritonsillitis, laryngitis, and cervical and mediastinal lymphadenitis; acute tracheitis and bronchitis, with early bronchopneumonia; edema of the glottis; marked hyperemia and moderate edema of the meninges; streptococcus septicemia; red splenic tumor; slight aortic atheroma.

CASE 15.—Moderate inflammation of the upper respiratory tract, with enlargement of the cervical lymph nodes; streptococcus septicemia and encephalitis; chronic and acute vegetative endocarditis of the aortic valve; cloudy swelling of the parenchymatous organs; diffuse scarring of pia-arachnoid.

The survey of 487 cases of septic sore throat elicited that the frequency of the main complications occurred thus: erysipelas, 20; otitis media, 14; arthritis, 12; septicemia, 12; peritonitis, 10; vomiting, diarrhea, 10; skin eruptions, 6; myocarditis, 5; endocarditis, 1; appendicitis, 2; encephalitis, 2; laryngitis, 3; sinus infection, 3; neuritis, 1; nephritis, 2; subcutaneous hemorrhage, 1.

Fig. 4.—Map of west side of Portland, showing results of survey of dairy route: Rings designate unaffected users of milk in question; solid circles, users of milk acquiring septic sore throat; crosses, deaths among users; arrows indicate infection by drinking this milk obtained through another person; *P*, cases in hospital; *W*, girls' home (104 users, not indicated by dots); *G*, grocery store and milk depot, giving rise to at least four cases.

Cervical lympadenitis occurred in nearly all cases, often requiring paracentesis. Erysipelas came sometimes from the ruptured middle ear, sometimes from the nares, and in one instance from the eye.

Contact infections were quite the exception. We found evidence of less than a dozen such cases on our house-to-house survey. In the hospital, one physician became infected in this way, and in the same institution three nurses became infected, presumably from one particular patient whom they attended. There were a very few contact infections also in the girls' home.

SUMMARY

It is evident from the data obtained that this epidemic, with 487 cases and twenty-two deaths, was caused by the drinking of raw milk from one dairy, which had been rated as one of the best in the city.

Similar strains of hemolytic streptococcus were obtained in almost pure culture from the inflamed udder of a cow of the herd, from one milker's throat, and from the throats of numerous septic sore throat patients and contacts. All these strains were shown to be of the human type.

It is probable that the milker in question infected the udder of the cow, producing purulent mastitis; that, on one or more occasions, this cow was milked in with the herd, and that the massed infection thus produced resulted in the epidemic.

This cow's udder had both human and bovine strains of hemolytic streptococci. One quarter, containing a human strain, had a massive mastitis indistinguishable grossly from garget; another quarter, having a bovine strain, was only slightly consolidated.

PARAVERTEBRAL ANESTHESIA IN ACUTE SUPPURATIVE PLEURISY *

ISADORE SEFF, M.D.
NEW YORK

Paravertebral nerve block anesthesia lends itself for the induction of regional analgesia. It has been sufficiently developed to be employed almost as a routine in a certain group of cases. The good results reported by Kroenig and Siegel in 1916, with paravertebral conductive anesthesia in a large series of abdominal and gynecologic operations, prompted me to utilize this method in patients with empyema of the chest.

It is conceded that it is somewhat hazardous to subject a patient, already in a state of lowered resistance from a suppurative pleurisy, to the risks of a general anesthetic. Some of the dangers encountered with general anesthesia are the induction of a new pathologic lesion or an extension of an existent process in the lungs. For these and many other reasons, local anesthesia is advisable in this group of cases.

Paravertebral anesthesia was first conceived by Sellheim in 1905. The object of the paravertebral injection is to block the spinal nerves at their exit from the intervertebral foramina, where the anterior and posterior branches have already joined. This includes the communicating branches to the sympathetic system, which is derived from the anterior root of the spinal nerves.

A knowledge of the location and distribution of the spinal nerves with special reference to the vertebrae is an essential preliminary requirement for the accomplishment of the desired results.

* From the Surgical Service, Beth Israel Hospital.

TECHNIC

Three quarters of an hour prior to operation, the patient is given a hypodermic injection of a quarter of a grain of morphin sulphate and 1/150 grain of atropin sulphate. A freshly prepared solution of procain is employed in 0.5 per cent. strength. Ten drops of a 1:1,000 epinephrin chlorid solution is added to each 30 c.c. of the anesthetic solution.

The patient is placed on the normal side, the head slightly flexed on the chest. The thighs are semiflexed on the abdomen, which increases the posterior convexity of the vertebral column, thereby creating an increased distance between the spinous processes, and also between the ribs posteriorly. With the patient in this position, the approach to the spinal nerves coming through the intervertebral foramina is accomplished with greater ease. It has been my practice to block the three spinal nerves above and the two below the rib chosen for the resection. With an empyema located in the right chest, a section of bone from the eighth rib, usually just in front of the angle, is removed. On the left side, the ninth rib is selected.

In patients with a right suppurative pleurisy, a point 1¼ inches (32 mm.), or two finger breadths, external to the tip of the fifth dorsal spinous process is selected, at which an intradermal wheal is first made. A long, thin needle is then directed perpendicularly and somewhat upward until the upper edge of the sixth rib is felt. The needle is then directed upward and a little inward, thereby reaching the intervertebral foramen through which the fifth dorsal spinal nerve emerges. In this region the needle is first passed for a distance of 2.5 cm., and then for about 3 cm. after going over the edge of the rib. From 15 to 20 c.c. of the solution is injected, only a small quantity being infiltrated on insertion and removal of the needle. This procedure is repeated opposite the sixth, seventh, eighth and ninth dorsal spinous processes.

It is very important to bear in mind, as the needle passes over the rib or approaches bony structure, that manipulation must be gentle because of the sensitive periosteum. One must also wait at least fifteen minutes after the last injection, in order to secure complete analgesia of the operative field.

To obtain complete analgesia when the incision is extended to the inner side of the mammary line, it is necessary to infiltrate over the sternum above and below the chondrosternal articulation of the rib to be resected, and for the same distance as posteriorly. This is done to block the intercommunicating branches of the nerves coming from the opposite side.

When local anesthesia by infiltration over the operative field is used for rib resection, pain is experienced by the patient because analgesia of the sensitive periosteum is never complete. As the pleura is incised, respiration becomes labored and more rapid, and is accompanied by an expulsive cough. When general anesthesia is administered there is marked cyanosis, and the breathing becomes irregular and stertorous. Often it is necessary to discontinue the administration of the anesthetic on account of the continuous cough. The dangers incident to general anesthesia must always be borne in mind.

This picture should be contrasted with that experienced in a series of twenty-seven cases in which operation was performed for acute suppurative pleurisy, the paravertebral method of regional anesthesia being employed. The general appearance of the patient remains unchanged. There is freedom of pain through-

out the entire period of operation. This is especially striking when the periosteum is separated from the rib, and when the latter is cut through or removed by the rongeur. Within the entire area of analgesia, the chest wall is seen to be rigid. The rate and character of the pulse and respiration are not disturbed. The usual expulsive cough following the opening of the pleural cavity is absent. The exposed lung can be manipulated without producing any evidence of irritation. The pus and fibrin can then be removed. The pus is removed by gentle suction, or the patient can be tilted to the desired position so that the contents of the pleural cavity can be evacuated just as water is poured from a pitcher, without causing any undue change in the condition of the patient. The fibrin is removed from the pleural cavity and the surface of the lung by dressing forceps or a ring clamp, without any irritation.

RESULTS

The paravertebral method of conductive anesthesia was employed in seven cases up to August, 1917. At that time the work was discontinued on account of my entering the U. S. Army service. In 1920, the method was again used in two cases. Since September, 1922, the work has been resumed, and is used in all cases of acute suppurative pleurisy that come under my care.

To emphasize the advantages of the paravertebral method of conductive anesthesia, a detailed report of two of the cases of this series of acute suppurative pleurisy will be instructive.

CASE 1.—W. G., a man, aged 25, admitted to the medical service, Aug. 3, 1916, complained of pain in the left chest, an irritable cough, chills and fever of four days' duration. The temperature on admission was 105.2 F.; pulse, 114, and respiration, 40. A left lobar pneumonia was diagnosed. The clinical picture remained unchanged for the following twelve days. The left pleural cavity was then aspirated, and pus was obtained. Operation was performed, August 16. Ninety cubic centimeters of 0.5 per cent. solution of procain, with 10 minims of a 1:1,000 solution of epinephrin chlorid to each 30 c.c., was injected into the region of the sixth, seventh, eighth, ninth and tenth dorsal spinal nerves of the left side. About fifteen minutes after the last injection, the skin, subcutaneous tissue and muscle were incised over the ninth rib just in front of its angle. There was an entire absence of pain. Then the periosteum was incised and separated from the rib, and the latter was resected. After the pleura was incised, a thick, greenish-yellow, purulent fluid was evacuated. The patient did not show any evidences of shock. His general appearance improved, and the pulse and respiration rates became slower. Analgesia persisted for two hours after the completion of the operation. The temperature gradually came down to normal in three days. The patient then made an uneventful recovery, and was discharged from the hospital thirteen days after the operation, with the wound completely healed.

CASE 2.—P. G., a married woman, aged 41, admitted to the surgical service, Oct. 19, 1920, had been operated on at another institution, fifteen months before, for an acute suppurative cholecystitis. There remained a persistent biliary sinus discharging a bile-stained mucopurulent fluid. October 23, a cholecystectomy and a choledochotomy were performed. During convalescence, she contracted a left lobar pneumonia. November 25, a roentgen-ray examination showed clouding of the lower half of the left pulmonary field. With the patient in the upright position, fluoroscopy demonstrated a fluid line at about the level of the angle of the scapula. Pus was aspirated from the pleural cavity in the eighth space, midscapular line. Culture showed the presence of *Staphylococcus pyogenes-albus*. On the following day, operation for empyema was performed with paravertebral anesthesia. The ninth rib for a distance of 3 inches in front of its angle was resected. A large quantity of thick, greenish pus was evacuated. The clinical picture, however, remained unchanged. The abdominal wound was almost healed. The chest wound continued to discharge a small quantity of pus. Dec. 20, 1920, aspiration of the same side of the chest in the sixth intercostal space revealed pus. With the same method of anesthesia, a portion of the seventh rib posteriorly was resected. There was found an encapsulated empyema, which was separated from the lower cavity by a dense band of adhesions running from the interlobar fissure to the chest wall. This was evidently the result of a pleurisy which she had had some years previous to her first gallbladder operation. The patient then made an uneventful recovery. She was discharged from the hospital, Jan. 8, 1921, with all wounds completely healed. A year and a half later the patient showed a gain in weight of 40 pounds (18 kg.), and was in good physical condition.

MORTALITY

Of the total number of twenty-seven cases ranging from 14 months to 64 years, only two terminated fatally:

CASE 3.—The first fatality occurred in M. T., a man, aged 52, who was admitted to the medical service, Sept. 13, 1922, with a complaint of precordial oppression, dyspnea and cough. Eight months prior to admission, he was discharged from the hospital, with a diagnosis of a right serofibrinous pleurisy. For the following two months he was much improved, complaining of an infrequent cough with foul smelling sputum. Four months before admission, he became progressively worse, there being rusty sputum, pain in the right chest and interscapular region, and an afternoon rise of temperature. The temperature on admission was 102.2 F.; pulse, 110, and respiration, 40. A diagnosis of acute suppurative pleurisy was made, which was confirmed by aspiration and roentgen ray. September 20, thoracotomy and resection of a portion of the eighth rib was done under paravertebral anesthesia. Improvement was progressive to September 26, at which time a complicating right saphenous phlebitis occurred. The patient then had a septic temperature. Blood culture showed *Streptococcus hemolyticus*. The patient died, October 1.

CASE 4.—The second mortality occurred in S. S., a boy, aged 3 years, who was admitted to the medical service, March 3, 1923, complaining of fever, pain in right chest and cough of one week's duration. Examination of the chest showed a bronchopneumonia of the upper half of the right chest; aspiration of the chest in the sixth space posteriorly revealed the presence of an empyema. The temperature on admission was 102.6 F.; pulse, 130, and respiration, 60. The patient was operated on the same day, with paravertebral anesthesia, a thoracotomy and rib resection being done. The child did not improve, and died eleven days after operation from a general sepsis.

No definite conclusions concerning the mortality rate in so small a series can be attempted. However, it must be borne in mind that many of the patients in this series had severe protracted empyemas, and the results are, indeed, encouraging.

COMMENT

The postoperative comfort of the patient is striking. This is probably due to the almost entire elimination of shock.

The period of convalescence was decidedly shortened. Complete healing of the wounds ranged from a period of from twelve to sixty days.

The ability to palpate the pleural cavity, and to remove the fibrin and break up fresh adhesions without causing any irritative symptoms, demonstrates the effectiveness of the analgesia obtained by the paravertebral method.

With perhaps few exceptions, I employ paravertebral anesthesia now as a routine in acute suppurative pleurisy, and I consider it the method of choice.

252 West Eighty-Fifth Street.

DIMINISHED GLYCOLYSIS IN THE BLOOD IN DIABETES

PRELIMINARY REPORT, AND A TENTATIVE THEORY OF THE DISEASE *

WILLIAM THALHIMER, M.D.
AND
MARGARET C. PERRY, A.B., A.M.
MILWAUKEE

It is well known that when blood is removed aseptically from the body and kept at body temperature, the blood sugar steadily diminishes and may entirely disappear in twenty-four hours. This process is called glycolysis, and is thought to be caused by a ferment known as the glycolytic ferment. It is important to emphasize that this action occurs in vitro.

Very little is known about this ferment, even less than the little we know of the fundamental nature of most of the other ferments. It has been demonstrated [1] that the glycolytic ferment is present only in the cellular elements of the blood, and not in the plasma; also there is evidence that the leukocytes contain considerably more than do the red blood cells.

A ferment similar to, and in all probability identical with, the glycolytic ferment of blood is present in other tissues, perhaps in varying amounts in all tissues. Pieces of kidney, obtained aseptically, will cause a marked lowering of the copper-reducing power of a solution of glucose; Levene and Meyer [2] have shown that lactic acid is formed.

Our interest in this ferment has been stimulated by the remarkable work of Banting, Best, Macleod, and their collaborators on insulin. The clinical work that we have undertaken with insulin [3] has caused us to study a number of phases of carbohydrate metabolism, but in this preliminary report only the studies of blood glycolysis will be presented. Other investigations are in progress and will be reported later.

BLOOD GLYCOLYSIS

We have been able to find in the literature only two important investigations of blood glycolysis. Lepine [4] states that the glycolytic ferment is markedly diminished in diabetic blood. Careful search of his publications reveals that all his observations, with the exception of one, were made on the blood of depancreatized dogs with experimental diabetes. The one exception was the blood of a patient with severe diabetes, in which the blood glycolysis was very much diminished. His observations will be of inestimable value when more is known about carbohydrate metabolism and the mechanism of the action of insulin.

Macleod,[5] as a result of his experiments, states that blood glycolysis is not changed in "diabetes." He places "diabetes" in quotation marks, referring to hyperglycemia produced in dogs and not to true diabetes. This hyperglycemia was caused by stimulation of the splanchnic nerves, by asphyxia (with curare) or by injections of epinephrin. All of the animals were anesthetized with ether. His experiments show that under these conditions there is no change in blood glycolysis. There is no evidence to prove that the cause of the hyperglycemia produced by these methods is the same as the cause of hyperglycemia in diabetes. Since all of the animals were anesthetized with ether, this may have had some effect on the blood glycolysis. Macleod found that the presence of oxalate in the blood, to prevent coagulation, reduces the amount of glycolysis. He has shown that the glycolytic ferment utilizes, equally well, either commercial glucose or glucose made from glycogen, when these are added to the blood.

Eadie [6] has recently demonstrated that the addition of insulin to sterile defibrinated blood, to oxalated blood or to mixtures of this blood and expressed muscle juice has no influence on the rate of glycolysis.

We have determined the amount of glycolysis occurring in twenty-four hours at 37 C.[7] in defibrinated blood from a series of normal persons and from a series of patients with diabetes. The blood (from 30 to 60 c.c.) was drawn from an arm vein with a sterile syringe. It was transferred immediately to sterile flasks containing glass beads, and in every instance it was defibrinated by shaking for one-half hour. A few cubic centimeters of the original blood was placed in a tube containing oxalate for a routine blood sugar determination. Every experiment was controlled bacteriologically, and only those results are reported in which the blood was sterile at the end of twenty-four hours.

Loss of Blood Sugar by Glycolysis in Defibrinated Blood of Diabetic and Normal Persons *

Diabetic Patients	Blood Sugar	Blood Sugar after 24 Hrs.	Total Loss	Severity of Diabetes
Bm	294.3	100.5	193.6	Mild
Be	268.5	230.0	38.5	Severe
Cn	268.5	66.7	201.8	Mild
Gy	254.8	106.9	147.9	Moderate
Sr	392.2	229.9	62.3	Severe
Ps	307.8	136.5	171.3	Moderate
Nn	296.3	104.2	192.1	Moderate
Rl	579.8†	526.3	53.5	Severe
Fh	330.1	138.8	181.3	Moderate

Normal Subjects	Blood Sugar	Blood + Dextrose	Blood Sugar after 24 Hrs.	Total Loss
Sr	105.8	434.6	210.5	219.6
Ls	115.6	454.5	72.5	382.0
Hr	89.2	519.5	233.9	285.6
Hi	93.0	449.5	235.3	214.2
Hl	91.3	512.8	210.5	302.3
Ny	85.2	869.5	563.4	306.1

Patient	Time	Blood Sugar	Blood + Dextrose	Blood Sugar after 24 Hrs.	Total Loss
Gy	8 a. m.‡	178.2	500.0	449.5	50.5
	10 a. m.§	183.5	506.3	400.0	106.3
	1 p. m.#	123.8	625.0	335.8	289.2

* All of the figures for blood sugar and dextrose are given in milligrams per hundred cubic centimeters of blood.
† Blood fortified with dextrose.
‡ 8 a. m., before breakfast, last injection of insulin eighteen hours before.
§ 8:15 a. m., 10 units of insulin and breakfast.
# 12 noon, 10 units of insulin.

BLOOD SUGAR UNDER INSULIN TREATMENT

We found, early in the investigation, that the sugar present in the blood of normal persons and in that of some patients with diabetes in which a low blood sugar was due to insulin treatment disappeared in twenty-four hours. To estimate the amount of glucose susceptible of being destroyed by the glycolytic ferment,

* From the Laboratories of Columbia Hospital.
1. Rona and Doblin: Biochem. Ztschr. **32**: 489, 1911. Von Noorden: Ibid. **45**: 94, 1912.
2. Levene and Meyer: J. Biol. Chem. **11**: 361, 1912.
3. The Preparation used was insulin-Lilly.
4. Lepine: Le diabète sucre, Paris, 1909; Le sucre du sang, Paris, 1921.
5. Macleod: J. Biol. Chem. **15**: 497, 1913.
6. Eadie, quoted by McCormick, Macleod, Noble and O'Brien: J. Physiol. **57**: 247, 1923.
7. The twenty-four hour period was decided on as yielding more information than a shorter period.

all of the normal and these diabetic bloods were fortified with chemically pure dextrose.

The Folin-Wu [8] method was used for determining the blood sugar, and the readings were made with a Bausch and Lomb Duboscq type colorimeter. The original blood sugar determinations were made immediately after the half hour of defibrination, and a second determination was made on the defibrinated blood which had been incubated at 37 C. for twenty-four hours.

The results of these experiments are given in the table. The blood sugar figures and the loss by glycolysis in twenty-four hours are recorded in milligrams per hundred cubic centimeters of blood. It has been borne in mind that the number of leukocytes in the blood may influence the rate and amount of glycolysis. Leukocyte counts have been made on all samples of oxalated blood, but are not presented, as no significant correlation is evident at this time.

The accompanying table shows that glycolysis was definitely less in blood from patients with diabetes than from normal persons. The averages of our results show that normal blood, incubated at 37 C. for twenty-four hours, lost 289 mg. of glucose per hundred cubic centimeters, and that blood from patients with diabetes lost only 138 mg. of glucose. The amount of glycolysis in blood from diabetic patients was inversely proportional to the severity of the diabetes. We observed that the same amount of glycolysis occurred in defibrinated diabetic blood as in the same blood fortified with glucose. We have been unable to perform this experiment with normal blood, as in every instance the glycolytic ferment has been more than sufficient to use up all the normal amount of glucose (blood sugar) present. One experiment with a mixture of one part of normal defibrinated blood set up in duplicate with two parts of diabetic defibrinated blood and with two parts of the same blood fortified with glucose showed less glycolysis than the calculated amount. Experiments such as these must be repeated many times, but, in the meantime, one must bear in mind the possibility of the presence of an antiglycolytic ferment in diabetic blood. The difference in the average amount of glycolysis which occurred in normal and in the diabetic bloods studied is about the same as the difference in the average amount of blood sugar that was present.

We found that lactic acid is present in the blood after glycolysis in sufficient quantities to give a distinct yellow color with ferric chlorid (equal amounts of dilute ferric chlorid solution and the protein-free filtrate from the blood were used). Similar filtrates of blood before glycolysis did not yield a yellow color under these conditions.[9]

We have been able to study satisfactorily the variation in blood glycolysis in one case of diabetes treated with insulin. Results given at the bottom of the table indicate that the amount of glycolysis varied directly with the administration of insulin. In one other case, we were able to make only two observations on blood obtained before and after the injection of insulin, and here the variation in glycolysis, while not so marked, was in the same direction. Since Eadie has demonstrated that insulin does not increase the glycolytic power of blood when added to it in vitro, it seems probable that the increase in glycolytic action observed in these two cases was caused by an indirect action of insulin on some ferment mechanism within the body.

The significance of the results reported must await accurate interpretation until more is known of carbohydrate metabolism. Macleod [5] has pointed out that the amount of glucose used up by glycolysis within twenty-four hours, even when calculated for the total amount of circulating blood, is small compared with the amount of glucose utilized by the entire body.

The relationship of the lactic acid formed by tissue or blood glycolysis to carbohydrate metabolism is a problem of the future. This may be of significance, since Hill and Lupton [10] and others have shown that the glycogen in the muscle is converted into lactic acid with explosive rapidity when the muscle is stimulated to contract. Repeated contractions, to the stage of exhaustion, cause all the glycogen to be converted into lactic acid. With recuperation of the muscle, about five sixths of the lactic acid is slowly reconverted into glycogen, but one sixth of it disappears. This suggests that lactic acid may be an early intermediary product in glucose metabolism.

The end-products of glucose metabolism are carbon dioxid and water. Therefore this must be accomplished by a process of oxidation or of dehydrogenation. The early intermediary products in this metabolism are probably glyceric aldehyd, methyl glyoxal and lactic acid. Nothing further of importance is known, but suggestive investigations have been reported recently.

It occurred to us that if this process is one of oxidation, oxidizing ferments may be its cause. This speculation is strengthened by the knowledge that insulin increases the repiratory quotient in diabetic patients, therefore increasing the oxidation processes in these persons.

Oxidizing ferments are known to be present in all, or practically all, animal and vegetable tissues. These include the oxidases and peroxidases, but very little is known about them.

We tested insulin for these ferments with alphanaphthol and with paraphenylendiamin, but our results were negative. Eadie [6] has found that insulin added to blood in vitro does not increase the loss of glucose that normally occurs (glycolysis). Therefore, since insulin causes increased glucose combustion in the animal organism, it must act indirectly by stimulating, or activating, an oxidizing ferment or ferments. Our results indicate that less glycolytic ferment is present in the blood of diabetic than in that of normal persons, and that administration of insulin increases the amount of glycolytic power in the blood of diabetic patients. Blood glycolysis, as well as tissue glycolysis, converts glucose into lactic acid. This is not an oxidation process, but occurs by a transformation of one molecule of glucose into two molecules of lactic acid. Nevertheless, it seems probable that the formation of lactic acid is a preliminary step in the oxidation of glucose in the body.

This consideration led us to test the ability of raw potato, which contains both oxidases and peroxidases, to lower the blood sugar of animals, and to reduce the amount of glucose in a glucose solution.

In one experiment, 5 c.c. of juice expressed from a raw potato, injected intravenously into a 1,500 gram rabbit, was followed by reduction of the blood sugar

8. Folin, O., and Wu, H.: J. Biol. Chem. **41**: 367 (March) 1920.
9. Quantitative determination of the amount of lactic acid formed is being undertaken.

10. Hill, A. V., and Lupton, H.: Quart. J. Med. **16**: 135 (Jan.) 1923.

in one hour from 0.17 to 0.13 per cent. This result is comparable to the early results obtained by Banting and Best with their original unconcentrated preparations of insulin. We have also found that sterile pieces of potato, and juice expressed from these, introduced into a glucose solution, after incubation for twenty-four hours at 37 C., caused this to lose from 26 to 36 mg. of glucose per hundred cubic centimeters.

Since the performance of these experiments, Winter and Smith [11] have published their findings, namely, that a solution of a substance prepared from yeast causes lowering of blood sugar after intravenous injection into rabbits in a way comparable to that caused by insulin. This substance they found to have other properties similar to those of insulin.

CAUSATION OF DIABETES

While continuing our experimental investigation on the properties of vegetable extracts (oxidases), we wish to suggest, tentatively, a new theory of diabetes.

There have been so many theories of diabetes proposed that we feel we must apologize for adding another. This theory has the advantage that it can be submitted completely to experimental test.

The correlation of two recent investigations with our theoretical considerations has also been borne in mind, and whereas there is no incompatibility, the significance is not clear at present. These studies are those of Winter and Smith [12] on alpha, beta and gamma glucose, and those of Hopkins [13] on the oxidizing and reducing power of a substance, glutathion, which he has found in the body.

We suggest that carbohydrate metabolism is performed by oxidizing ferments, of which oxidases are examples; and that one of the first steps in this process is the conversion of glucose into lactic acid. An example of this is blood glycolysis, wherein the glycolysis is effected mainly by the leukocytes, which are known to contain oxidases.

Vegetable substances caused in some experiments lowering of blood sugar and loss of glucose from a solution of glucose. Insulin does not cause a loss of glucose when added to blood in vitro, nor does it contain oxidases. Injection of insulin into animals does cause lowering of blood sugar and increase in the respiratory quotient. Our results also indicate that blood glycolysis, which is low in the blood from patients with diabetes, is increased in this blood when insulin is injected subcutaneously.

We, therefore, suggest that diabetes is caused by a deficiency in the power, or amount, of oxidizing ferments in all the tissues of the body, and that the index of this is found in the glycolytic power of the blood. These oxidizing ferments are mainly controlled by a pancreatic hormone, and insulin acts indirectly on all the tissues by stimulating or activating the oxidizing ferments.

CONCLUSIONS

We do not believe that blood glycolysis measures the total amount of glucose utilized in the body, but we do suggest, tentatively, that it represents an index of the ability of the tissues to utilize glucose. This index may have somewhat the same significance and value, as regards carbohydrate metabolism, as have quantitative blood sugar determinations.

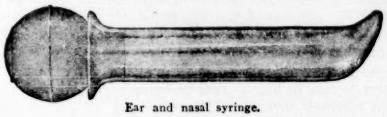
11. Winter, L. B., and Smith, W.: J. Physiol. **57**: 40 (Nos. 3 and 4) 1922.
12. Winter, L. B., and Smith, W.: J. Physiol. **57**: 100 (Dec.) 1922.
13. Hopkins, F. G., and Dixon, M.: J. Biol. Chem. **54**: 527-563 (Nov.) 1922.

Clinical Notes, Suggestions, and New Instruments

A NEW EAR AND NASAL SYRINGE

W. B. MASON, M.D., WASHINGTON, D. C.

In the treatment of the nose and ear, the necessity for a good syringe is generally recognized. My experience with the piston syringe has been unsatisfactory, and the fountain syringe or irrigating can are unpractical. I have had Becton, Dickinson & Co. modify their Asepto syringe to make it more suitable for our purposes, and find it most satisfactory. This modification consists of a curved, blunt nozzle which enables the physician to hold the syringe in a perpendicular position, thereby increasing its efficiency.



Ear and nasal syringe.

The advantages of this syringe are: It is inexpensive, simple in construction, and easy to sterilize; it is manipulated with one hand; it is self-filling; it gives an even, steady stream instead of squirting the solution into the nose or ear in jerks, as in the case of a piston syringe which is not in perfect order; there is no odor of lubricating oil or leather washers, and it is not formidable in appearance to a child or nervous patient.

1738 M Street.

CONGENITAL ABSENCE OF UTERUS AND VAGINA: REPORT OF A CASE

G. J. FERREIRA, B.S., M.D., BIWABIK, MINN.

History.—Mrs. B., a woman, aged 20, of Finnish parentage, married nine months, came to my office, Dec. 23, 1922, complaining that she had never menstruated. In the spring of 1922, shortly before her marriage, she consulted a physician in a nearby town for the same complaint. After examination, she was told that there was nothing to worry about, and that she would probably menstruate within another year. Thus encouraged, she married.

Examination.—The patient was well developed, well proportioned, and of pleasing personality. The head and neck were normal, the thyroid normal, the heart and lungs negative. Axillary hair was present in normal quantity. The mammae were well developed, the abdomen was normal.

The pelvis was well formed, and of the female type. Pubic hair was abundant and of characteristic distribution. On superficial inspection, the vulva appeared normal. The labia majora and minora and the clitoris were well developed. The introitus appeared normal, and there were small folds of mucous membrane which resembled a hymen. Examination, however, revealed a complete absence of the vaginal inlet. Rectal examination revealed a total absence of the uterus and probably of the vagina. Two small ovaries and two small tubes could be made out, the tubes being fused centrally into a small, hardened body.

March 14, 1923, the patient was examined by my chief, Dr. C. W. Bray, and my associate, Dr. W. G. Vande Steeg, and the same findings were registered.

The patient admitted quite marked libido.

Diagnostic Value of Reflex Dyspepsias.—The reflex dyspepsias, whether secondary to gallbladder, appendicular or other abdominal disease, comprise an important group, and it is essential that we should collect information as to the way in which their symptoms are produced.—J. A. Ryle, *Clin. J.* **52**:141 (March 21) 1923.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

INSULIN.—An aqueous solution of an active principle from pancreas which affects sugar metabolism. The strength of insulin is expressed in "units," one unit being one-third of the amount required to lower the blood sugar below 0.045 per cent. and cause convulsions in a rabbit weighing 2 kg. which has been previously starved for 24 hours.

Actions and Uses.—Insulin lowers the blood sugar in normal rabbits causing characteristic symptoms when a low level is reached, which symptoms are overcome by the administration of glucose. It prevents the hyperglycemia due to piqure, asphyxia and epinephrin. It increases the sugar consumption of the isolated mammalian heart. It causes glycogen to be deposited in the liver of diabetic animals fed with carbohydrates, and raises the respiratory quotient of such animals. It effects the metabolism of fat in diabetic animals and causes the acetone bodies to disappear from the urine. It has been demonstrated that the administration of insulin to diabetic dogs and to man in severe cases of diabetes mellitus restores to the body the lost ability to oxidize carbohydrate, and that glycogen is again stored in the liver. If insulin is administered at suitable intervals to a person suffering from diabetes mellitus, the blood sugar is maintained at a normal level and the urine remains free of sugar; fat is also burned and as a result, ketone bodies do not appear in the urine and diabetic acidosis and coma are prevented.

The administration of insulin is indicated in cases of diabetes mellitus which cannot be controlled at a satisfactory level by dietetic treatment. In such cases, with proper regulation of the diet, insulin should be administered in such amounts as to prevent glycosuria and a too great hyperglycemia. In some cases the dosage of insulin may be gradually decreased as the body power of utilizing carbohydrate returns toward normal.

Overdosage of insulin is followed by the development of serious symptoms which demand immediate treatment. The patient complains of weakness and fatigue and a feeling of nervousness or tremulousness. This is followed by profuse sweating, which is the most characteristic sign of overdosage. There is sometimes pallor or flushing. In the more severe forms there is acute distress with mental disturbances and even unconsciousness. These symptoms are relieved by the administration of some form of available carbohydrate by mouth or stomach tube, or, if the patient is comatose, by the intravenous injection of from five to twenty grams of pure glucose in a five to fifty per cent. sterile solution. (The intravenous injection of glucose may at times be obviated by the subcutaneous injection of 0.3 Cc. to 0.6 Cc. of a 1:1,000 solution of epinephrin chlorid, but this must always be followed by carbohydrates by mouth.)

Dosage.—Insulin is administered subcutaneously in the arm, thigh or buttock, one, two or three times a day, 15 to 60 minutes before a meal, depending upon the rapidity of absorption of carbohydrate from the stomach and insulin from the subcutaneous tissue, as estimated after observation of each individual patient. The dosage of insulin which is required to reduce the blood sugar to approximately the normal level should be determined for each patient by estimations of blood sugar before and after administration of insulin. If insulin must be administered without adequate control of blood sugar, it is safer to have a blood sugar somewhat above normal with a transient glycosuria, than to have the urine sugar free and the blood sugar at or below normal. The average dosage depends on the diet and severity of the disease. Small doses of a few units should be used in the beginning and this increased as may be necessary. When sugar is no longer found in the urine, the dose of insulin is decreased; the attempt being made to get rid of the noon dose by shifting the carbohydrate as far as feasible to breakfast and supper, and decreasing the noon insulin by a unit each day.

In cases of coma or severe acidosis, an initial dose of 15 or 20 units of insulin may be given, followed subsequently at 3 to 4 hours intervals by doses of 10 units with the simultaneous administration in each case of 10 to 20 grams of glucose. More than 60 units in twelve hours are rarely indicated.

In a small number of cases of diabetes mellitus, insulin can be discontinued, particularly with patients who receive it because of an exacerbation caused by complications, and where diabetes is of recent onset (though perhaps the latter should receive it intermittently as a prophylactic against increasing severity).

Insulin-Toronto.—A brand of insulin.

Manufactured by the Connaught Antitoxin Laboratories, University of Toronto, Toronto, Canada, under license from the Insulin Committee of the University of Toronto.

Insulin-Toronto 5 Cc. vials, 5 units in each cubic centimeter.

Insulin-Toronto 5 Cc. vials, 10 units in each cubic centimeter.

Fresh pancreatic beef glands from which the fat and connective tissue has been removed are minced and treated with equal weight of 80 per cent. alcohol containing 0.3 per cent. absolute sulphuric acid and the mixture constantly agitated during three hours. The mixture is then transferred to plaited filters contained in glass funnels and the filtrate is collected. The residue is then re-extracted for three hours with 60 per cent. alcohol. The mixture is then transferred to plaited filters and the filtrate added to the first filtrate. The united filtrates are neutralized, using litmus as indicator, and chilled to 0 C. The turbid liquid is filtered and the filtrate concentrated to about one-fifteenth of its original volume in a vacuum still at a temperature below 30 C. The concentrate is transferred to a separator, acidified to 1 per cent. absolute sulphuric acid and ammonium sulphate is added to half saturation (37 gm. per 100 Cc. of concentrate). After one hour the clear liquid is drawn off from the protein material, which has separated and risen to the top and in part adheres to the walls of the separator. The protein matter in the separator (which contains the insulin) is treated with sufficient 95 per cent. alcohol so that the concentration of the alcohol is between 70 to 80 per cent. The mixture is filtered and the alcoholic filtrate (containing the insulin) is precipitated by the addition to the filtrate of an equal volume of anhydrous ether. After six hours the ether-alcohol solution is decanted from the precipitate. The precipitate is dried in vacuum, washed well in acidified water (*p*H 4.7 to 5.0) containing 0.3 per cent. cresol and allowed to stand over night. The supernatant liquid is then poured off and the precipitate is dried by centrifuging. This residue is taken up in acidified water containing 0.3 per cent. cresol, adjusted to *p*H 3.7 and filtered. The filtrate (containing the insulin) is purified by a so-called isoelectric precipitation, that is, by adjusting the acidity to a *p*H 4.7 and allowing the solution to stand in an ice chest for from ten to twenty-four hours. The mixture is filtered; the precipitate taken up in acidified water (*p*H 2.5) filtered and diluted with acidified water to the desired potency.

The method for determining the potency of insulin is that described in the *American Journal of Physiology*, Vol. 62, p. 162. The insulin solution is then diluted, if necessary, with sterile distilled water of a correct *p*H concentration (usually 2.5) to the desired strength and 0.1 per cent. cresol is added. The solution is then passed through a sterile and Mandler filter and the potency of the filtered solution is determined by the accepted method. The liquid is then filled into vials. A number of vials of each lot is set aside and the sterility of these is determined before the remainder is released.

QUININE ETHYL CARBONATE.—Quininae Aethylcarbonas.—$C_2H_5O.CO.O.C_{20}H_{23}N_2O$.—The quinine ester of ethyl carbonic acid. First introduced as euquinine.

Actions and Uses.—Quinine ethyl carbonate is used in place of quinine sulphate and similar soluble quinine salts when a practically tasteless quinine compound is preferred (see quinine derivatives New and Nonofficial Remedies, 1923, p. 254).

Dosage.—The same as that of quinine sulphate.

Quinine ethyl carbonate occurs as a light, fleecy conglomeration of delicate white needles, which are practically tasteless. It is sparingly soluble in water, but freely soluble in alcohol, ether and chloroform. It is soluble in petroleum benzin. Quinine ethyl carbonate possesses basic properties; it forms well crystallizable, bitter salts with acids. Quinine ethyl carbonate melts at from 89 to 91 C.

Dissolve about 0.2 Gm. of quinine ethyl carbonate in 5 Cc. of diluted sulphuric acid and dilute to 50 Cc. The solution exhibits a strong blue fluorescence, and responds to the general tests for alkaloids. Add 2 or 3 drops of bromine test solution to a 1 cubic centimeter portion of the solution followed by 1 Cc. of ammonia water; the liquid acquires an emerald green color due to the formation of thalleoquin. Dissolve 0.2 Gm. of quinine ethyl carbonate in 5 Cc. of nitric acid and dilute to 25 Cc. To a 5 cubic centimeter portion, add 1 Cc. of silver nitrate solution. No precipitate is formed (*chloride*). To another 5 cubic centimeter portion, add 1 Cc. of barium chloride solution. No precipitate is formed (*sulphate*). Add 5 Cc. of iodine solution to about 0.2 Gm. of quinine ethyl carbonate, decolorize with sodium hydroxide solution and warm. The odor of iodoform is manifested (*ethyl group*). Incinerate about 0.5 Gm., accurately weighed. Not more than 0.1 per cent. of residue remains.

Quinine Ethyl Carbonate-M. C. W.—A brand of Quinine ethyl carbonate-N. N. R.

Mallinckrodt Chemical Works, St. Louis, distributors. No U. S. patent or trademark.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 2, 1923

RECENT PHYSIOLOGIC FINDINGS REGARDING INSULIN

As could be expected, the almost dramatic clinical results that have attended the introduction of insulin into the therapy of diabetes have focused attention in many places on the nature of this uniquely potent product. The search for the substance to which the therapeutically active products owe their efficacy ought to be, and assuredly will be, pursued assiduously by scientific talent until some reward is secured in the discovery of the actual hormone. Thus, the history of research which led to the isolation of epinephrin and thyroxin is likely to repeat itself, whereupon the organic chemist will find a stimulus to further labors in the direction of artificial synthesis. It would, indeed, be a fortunate and happy circumstance if the approaching centennial of the first artificial synthesis of a substance, urea, earlier assumed to owe its origin to the inimitable "vital" activity of living tissues, could be made to encompass the synthetic production of a number of the recognized physiologically potent hormones which have baffled the chemical investigator.

Meanwhile, the enthusiasm for helpful clinical therapy must not be allowed to overshadow entirely the pressing need of further fundamental investigations on the genesis of diabetes, the origin of insulin, the variations in its production in the body, and the mode of its action. Insulin therapy, as shown by the clinical articles appearing in this issue, is essentially a palliative. The underlying defect in the organism that fails to burn its sugar probably remains to be discovered. The patient prosecution of the problem of diabetic pathogenesis must not be obscured by the remedial blessing.

Attention may well be called, in this connection, to the researches of Murlin and his collaborators [1] at the university at Rochester, N. Y. These show that, through perfusion of the surviving pancreas, solutions can be obtained which promptly raise the respiratory quotient of diabetic animals. As this is clear evidence of actual combustion of sugar in the body, it becomes an excellent criterion of relief from the diabetic condition.

Insulin-containing extracts have already been secured from a considerable variety of sources, including various vegetable products; at any rate, the extracts have been found to affect the level of the blood sugar after they are introduced into the living body. The Rochester experiments duplicate, in a sense, the process by which the blood may normally acquire its supply of insulin from the pancreas. According to them, insulin is extracted by perfusion of the pancreas with acidulated Ringer's solution more readily than with the same fluid made slightly alkaline. Another feature with respect to the behavior of insulin has recently been elucidated by E. C. Noble and J. J. R. MacLeod.[2] It has become well known to all who have worked with the hormone that overdosage leads to serious symptoms associated with the consequent hypoglycemia. The symptoms give the impression that some substance having a highly irritative influence on the central nervous system has become developed. As Noble and MacLeod remark, it can scarcely be the case that this stimulus is afforded by a lowered percentage of glucose in the blood per se. It is more likely either that the hypoglycemia is related to the setting free of some toxic metabolic product which in the normal animal is directly or indirectly antidoted by a certain concentration of glucose, or that it causes some change in the chemical or physicochemical equilibrium within the cells, which results in a disturbance of their normal functions. One of the ways by which light can be thrown on this question is to see whether sugars other than glucose have the power to remove the symptoms. If a given sugar fails to have this effect, evidence is afforded not only that it cannot itself act like glucose, but also that it is not converted, to any considerable extent at least, into glucose in the animal body. The latest studies from Toronto show that the only sugar which can definitely antidote the symptoms that accompany the hypoglycemia due to insulin is glucose. Levulose, galactose and maltose may be followed by temporary slight improvement in the symptoms, and they cause a marked increase in the blood sugar. Arabinose, xylose, sucrose and lactose have no apparent effect on the symptoms, although there may be an increase in the reducing power of the blood. Glycerol and alkalis have no effect on the symptoms. Rational insulin therapy must now be placed on the safe basis of profound physiologic studies in which every detail of the reactions of the hormone

1. Murlin, J. R.; Clough, H. D., and Stokes, A. M.: Extraction of the Antidiabetic Substance (Insulin) by Perfusion of the Pancreas, I. The Influence of Neutral or Alkaline Perfusates on the Respiratory Metabolism of Depancreatized Animals, Am. J. Physiol. **44**: 330 (April) 1923. Murlin, J. R.; Clough, H. D.; Gibbs, C. B. F., and Stone, N. C.: Extraction of the Antidiabetic Substance (Insulin) by Perfusion of the Pancreas, II. Influence of Acid Perfusates upon the Blood Sugar, D: N Ratio and Respiratory Metabolism of Depancreatized Dogs, ibid. p. 348.

2. Noble, E. C., and MacLeod, J. J. R.: The Influence of Sugars and Other Substances on the Toxic Effects of Insulin, Am. J. Physiol. **44**: 547 (May) 1923.

has been carefully considered. Then, indeed, it will not be too much to expect even greater advances in the therapy of the abnormal metabolism of the carbohydrates.

CALCIUM THERAPY IN TUBERCULOSIS

The resistance to tuberculosis of those who work in lime dust is traditional. Whether lime salts taken into the lungs in these cases are deposited in the tubercles, or stimulate fibrosis by mere mechanical action, or whether they exert any beneficial influence at all, is not known. Nevertheless, the therapeutic administration of calcium in tuberculosis has gained favor and has been endorsed by many clinicians. Wersen administered calcium lactate by mouth to twenty children with tuberculous peribronchial lymph nodes, and studied them, with an equal number of controls, by the fluoroscope. He believed that the treated patients showed more calcification of the nodes and a greater improvement in health than did those who had not received calcium. Clinical reports of favorable results from the use of calcium are numerous, but in a recent review of the literature, Maver and Wells [1] state that they have been unable to find the reports of any clinical study that has been adequately controlled. They also conclude there is no experimental proof that the administration of calcium, either by mouth or otherwise, increases the amount of calcium deposited in tubercles or other necrotic areas, unless Wersen's observation is considered experimental.

An appreciable increase in the amount of calcium deposited in tuberculous tissues by increasing the calcium intake is not to be expected, except when the blood calcium is already below normal. The normal amount of blood calcium represents about the maximum that the blood can carry. A greater amount than normal is promptly precipitated out of the blood in those tissues that are most alkaline. It does not appear that any deficiency in blood calcium exists in tuberculous patients. At least, there are no figures obtained by modern methods which indicate such a deficiency. Steinitz and Weigert [2] analyzed the entire body of a one year old child who died of tuberculosis. They found a normal total ash figure and no abnormal distribution of the inorganic elements of the ash. Jacobowitz was not able to increase the blood calcium by oral administration either in normal children or in those with tetany. It has been shown, furthermore, that the subcutaneous injection in cats of nearly lethal doses of calcium chlorid produces a rise in blood calcium, which reaches its maximum in from thirty to ninety minutes, and which falls again to normal within five or six hours. The intravenous injection of large quantities may drive the blood calcium far beyond its normal amount, but the original figure is restored in about two hours.

In view of the supposed clinical benefits of calcium in tuberculosis, and of Wersen's observation especially, an experimental study of the influence of calcium feeding on the deposition of calcium in tuberculous and nontuberculous tissues was made by Maver and Wells. Their first analyses were of normal laboratory animals to establish controls. A dose of calcium lactate equivalent to from 25 to 30 gm. for an adult person was administered daily for periods varying from fifteen to 288 days. Various tissues were then examined. It was found that the administration of calcium had not generally appreciably increased the calcium content of the tissues, and no recognizable difference was found between animals that had received calcium for long or for short periods. A series of animals injected with human tubercle bacilli of low virulence, which were fed calcium after the lymph nodes became palpable, and another series injected with a virulent strain of human tubercle bacilli, were similarly examined. To determine the effect of calcium on the course of tuberculosis, twenty-four other normal guinea-pigs were at the same time inoculated subcutaneously with 0.005 mg. of a culture. Twelve of this series received calcium from the day of inoculation, and twelve received no calcium. Eighteen of these animals, evenly divided between calcium fed and controls, died within 135 days. Analysis of the two separate lots of tissues showed that the administration of calcium to these animals did not reduce the spread of the tuberculous lesions, or lead to a greater amount of fibroplastic tissue reaction. The average length of life of the calcium-fed animals in this series was 92.5 days, and of the animals receiving no calcium, 74.4 days. Maver and Wells say that nothing is less constant than the length of life of tuberculous guinea-pigs, even under identical conditions of dosage and environment, and the slight difference indicated here is of no significance whatever.

These experiments show, among other things, that the addition of calcium lactate to the diet of normal guinea-pigs does not increase the amount of calcium to be recovered from most of the tissues. The kidneys may contain a little more, presumably because they are excreting any excess absorbed, and the lymph nodes usually show an increased amount, presumably from the inhalation of dust. A marked tendency of calcium to accumulate in the tuberculous lesions was noted, but the amount of calcium in tuberculous tissue was not appreciably modified by feeding calcium lactate in addition to the usual diet. Tuberculous lungs showed a much less tendency to accumulate calcium than tuberculous spleens, livers or lymph nodes.

This study failed, therefore, to furnish evidence that the administration of calcium exerts a favorable influence on the course of tuberculosis. It involved numerous observations and repeated analyses of many small

1. Maver, Mary E., and Wells, H. G.: The Alimentary Absorption of Calcium and Its Deposition in the Tissues in Experimental Tuberculosis, Am. Rev. Tuberc. **7**: 1 (March) 1923.
2. Steinitz and Weigert: Deutsch. med. Wchnschr. **30**: 838, 1904.

animals, a mass of scientific detail carefully controlled, and a considerable period of time. It is convincing. In the face of a large amount of empiric belief of the beneficial effect of calcium, it would appear desirable to conduct clinical experiments of an equally scientific nature if the use of the calcium compounds is to be continued. Certainly there appears to be no scientific basis for their continued utilization.

THE BEHAVIOR OF STRONTIUM IN THE BODY

In the fundamental structures of the body, comparatively few elements are normally concerned. Despite the close relationship of various elements from the standpoint of chemical criteria, it by no means follows that their physiologic rôles are equally comparable. One need merely contrast the difference between the alkali metals sodium and potassium in this respect. In the case of the familiar alkali earth metals calcium, magnesium, barium and strontium, it is well known that the last two are decidedly detrimental to physiologic well-being, in contrast to calcium, for example, which is present in the properly developed adult to the extent of several pounds.

There has long been a debate in physiologic literature as to whether strontium can be substituted to any extent for calcium and magnesium, particularly in the skeletal system, in which the use of calcium salts seems to be primarily structural rather than functional. The results of the earlier feeding experiments with strontium have not given a clear answer to the problem. Strontium resembles barium in some of its actions. However, it is asserted to stand far behind the latter in toxicity, being even less toxic than calcium, according to Sollmann.

In a new series of investigations in the Department of Chemical Hygiene at the Johns Hopkins University, it has been demonstrated beyond question that strontium can actually be deposited in the bones. The deposition may go on quite rapidly under permissible conditions of diet.[1] As the amount of strontium in the skeletal structures increases, the content of calcium decreases. The available data seem strongly to indicate that strontium behaves independently of calcium as a constituent of the bone and does not replace it physiologically as a bone-building element. Strontium can be excreted into the milk so that the young can secure it in this way. The element may also be transmitted through the placenta into the body of the developing fetus.

Although strontium behaves like calcium so far as its susceptibility of being deposited in the bones and in the milk is concerned, the similarity ends there. When strontium does enter the body through either the placenta or the alimentary canal, its presence in the new bones may lead to conspicuously pathologic manifestations. A form of "strontium rickets" arises which, in contrast to ordinary rickets, cannot be combated with cod liver oil.[2] So long as strontium salts retain a place in the list of officially recognized medicinal agents, it is well to bear in mind the possibilities of its abnormal physiologic behavior. Although such compounds have been used to a limited extent in medicine, pharmacologists are in general agreed that strontium possesses no therapeutic indications. Taken in connection with the unfavorable action on bone development, this in itself is sufficient ground for abandoning entirely the use of strontium in therapy.

1. Kinney, E. M., and McCollum, E. V.: A Study of the Rate of Deposition and Paths of Absorption on Strontium in the Rat, J. Pharmacol. & Exper. Therap. **21**: 165 (April) 1923.

Current Comment

TRYPARSAMID AND ITS PENETRATION INTO THE SPINAL FLUID

Last week THE JOURNAL published the report of the University of Wisconsin investigators[3] on the use of tryparsamid in neurosyphilis. Of forty-four patients who were in an advanced stage of general paralysis, twenty-one had been discharged from the hospital and were earning a living. Of twelve other much agitated patients in an acute stage of the disease, seven recovered normal mentality and were earning a living. The remaining five mentally were in condition to work, but had not been discharged on account of the serologic findings. Workers of the United States Public Health Service have now made available the results of an experimental investigation[4] of the penetration into the cerebrospinal fluid of tryparsamid and other arsenicals, which is enlightening as to the mechanism by which the reported effects are brought about. A heavy suspension of *Trypanosoma equiperdum* was injected into the cranial subarachnoid space of rabbits. No essential difference in behavior toward arsenicals has been discovered between *T. equiperdum, T. gambiense* and *Spirochaeta pallida*. Preliminary investigation demonstrated that trypanosomes thus injected could be recovered in considerable numbers. Tryparsamid and other arsenicals were then injected into the ear vein of the infected animals. After twenty-four hours a careful search was made in at least six different specimens of cerebrospinal fluid taken from the various subarachnoid spaces of the brain and medulla. The absence of trypanosomes in these specimens was considered evidence of permeability of the meninges by the arsenical injected or of some trypanocidal derivative. Under these experimental conditions, tryparsamid proved more effective than any other arsenical used. An amount which was only 4 per cent.

2. Shipley, P. G.; Park, E. A.; McCollum, E. V.; Simmonds, Nina, and Kinney, E. M.: Strontium and Growing Bones, Bull. Johns Hopkins Hosp. **33**: 216, 1922.

3. Lorenz, W. F.; Loevenhart, A. S.; Bleckwenn, W. J., and Hodges, F. J.: The Therapeutic Use of Tryparsamid in Neurosyphilis, J. A. M. A. **81**: 1497 (May 26) 1923.

4. Voegtlin, Carl; Smith, M. I.; Dyer, Helen, and Thompson, J. W.: Penetration of Arsenic into the Cerebrospinal Fluid, with Particular Reference to the Treatment of Protozoal Infections of the Central Nervous System, Pub. Health Rep. **38**: 1003 (May 11) 1923.

of the minimal lethal dose was 87 per cent. efficient. With 16 per cent. of its minimal lethal dose, sulpharsphenamin was 82 per cent. efficient. In a list of ten arsenicals in order of efficiency, those already noted were first and second; atoxyl was fifth; neoarsphenamin, sixth; arsphenamin, seventh; silver arsphenamin, eighth, and "arsenoxid," ninth. Thus, clinical and experimental evidence indicates that tryparsamid, injected intravenously, penetrates into the cerebrospinal fluid more effectively than other available remedies.

THE OCTOCENTENARY OF "OLD BART'S"

Age with honor has ever commanded respect; when it is combined with healthy growth and vigor, young in all that spells progress and vitality, it is worthy of admiration. St. Bartholomew's Hospital in London this year celebrates the eight hundredth anniversary of its foundation: For eight hundred years it has rendered distinguished service to humanity and medical science. Founded as a monastic institution in 1123, it has since been in practically continuous operation on its present site, though not one of the original buildings is now standing. Rebuilding and reconstruction have been progressively carried out since 1729. Today the hospital has six hundred beds and all the laboratory and teaching facilities required to make modern in every respect the great medical school that is a part of it. The monastic control passed away in 1536, and the hospital was surrendered to the mayor and citizens of London by King Henry VIII by a charter that was signed, Jan. 13, 1547. At that time there was inaugurated a system of government by an elected board of governors, similar in many respects to that which obtains today in many hospitals in this country. The ideals that have directed the management of the hospital continuously are admirably and quaintly expressed in the charge that was given to the matron and her assistants at that time: "Ye shall also faithfully and charitably serue and helpe the poore in al their grieues and diseases, aswel by kepyng them swete and cleane as in gyueng thim their meates and drinks after the most honest maner. Also ye shall use unto them good and honest talk suche as may comforte and amend them." The value of hospitals as centers for medical teaching as well as for treatment and research is well exemplified by the history of this hospital, which has ever stood in the forefront of English medicine. Though the medical school was not formally organized until 1843, lectures and demonstrations were certainly given as early as 1750. Training of nurses was started in 1650, though the organized training school was not established until 1877. The list of celebrated physicians and surgeons who have practiced and taught in the hospital includes such names as William Harvey, Percival Pott, John Abernethy and Sir James Paget. The commemorative exercises to be held June 5 and on subsequent days will depict various stages in the growth of the hospital by means of pageants, and there will be a revival of the Fair of St. Bartholomew. Details of the program were outlined by our London correspondent in THE JOURNAL, May 19. The event is not only of historic interest, but also an inspiring stimulus to that far-sighted, unselfish devotion that has ever been the ideal of the medical profession.

Association News

RESOLUTIONS OF OHIO STATE MEDICAL ASSOCIATION

The following resolutions were officially transmitted through the Secretary of the Ohio State Medical Association for publication in THE JOURNAL, after adoption by the House of Delegates of that association at its meeting in Dayton, May 2, 1923:

WHEREAS, The activity of certain individual members of the Ohio State Medical Association and certain few component county societies has carried to many members of the medical profession throughout the United States the impression that the sentiments expressed and the actions demanded by the late "Medical Advisory Committee" and the "American Medical Press" are approved and are supported by the Ohio State Medical Association, therefore, be it

Resolved, That the opinions and the propaganda of the "Medical Advisory Committee" and the "American Medical Press" do not represent the opinions of, and are not approved by the Ohio State Medical Association; and further, be it

Resolved, That a copy of this resolution be sent to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for publication.

ANNUAL MEETING OF THE IDAHO STATE MEDICAL ASSOCIATION

The annual meeting of the Idaho State Medical Association will be held at Idaho Falls, June 13 and 14, 1923. Arrangements have been made for taking the guests of the Association on a trip through Yellowstone Park. Fellows of the American Medical Association en route to San Francisco are cordially invited to attend the annual meeting of the Idaho State Medical Association at Idaho Falls.

THE SAN FRANCISCO SESSION

Invitation from Colorado Springs

The physicians and sanatoriums at Colorado Springs invite the members of the American Medical Association to stop over there as they go or as they return from the annual session in San Francisco. Colorado Springs is noted for the treatment of tuberculosis as well as for its wonderful scenery. Visiting physicians will be given an opportunity to observe the methods in use in the sanatoriums, among which are those maintained by the Modern Woodmen of America, the International Typographical Union and the Union Printers' Home. In addition to these are the Cragmor Sanatorium, the Glockner Sanatorium, St. Francis Hospital, Sunnyrest, Idlewold, Montcalm Sanatorium, Nob Hill Lodge, Star Ranch-in-the-Pines, and Crestone Heights Sanatorium. Stopovers will be allowed at Colorado Springs without extra cost.

Alpha Kappa Kappa Dinner

The Alpha Kappa Kappa dinner will be held at the Family Club Farm, Woodside, Calif., Thursday, June 28. San Francisco members of the fraternity will provide automobiles for carrying visiting members to the Family Farm. Those who desire to do so may remain overnight and return to San Francisco at 8 o'clock in the morning of Friday. Dr. Lloyd Bryan, Butler Building, San Francisco, is the secretary of the Alpha Kappa Kappa of California.

Omega Upsilon Phi Fraternity Banquet

The Omega Upsilon Phi fraternity will have a banquet in the University Club, San Francisco, Thursday evening, June 28. Dr. William O. French, Jr., Stanford University Medical School, Sacramento and Webster streets, San Francisco, is the scribe of Iota Chapter of Omega Upsilon Phi, and is anxious to have the names of all members of the fraternity who will attend the annual session in San Francisco.

Phi Chi Medical Fraternity Banquet

The Phi Chi Medical Fraternity will have a banquet at the Hotel Whitcomb at 6:30 p. m., Wednesday, June 27, the Stanford and University of California chapters acting as hosts. The dinner will be over in time for those present to attend the President's reception. Those who expect to attend this banquet will please notify Dr. K. O. Haldeman, 2525 Durant Avenue, Berkeley, Calif.

Special Train to San Francisco

The Chicago, Rock Island and Pacific Railway offers special accommodations on its trains leaving Chicago, June 20 and June 21, for those who wish to go to San Francisco to attend the annual session. These trains will leave Chicago at 10 p. m., central standard time, and will arrive at Colorado Springs at 7:30 a. m. the second day. Leaving Colorado Springs at 10:58 a. m. the same day, Salt Lake City will be reached at noon the third day and San Francisco at 5:45 p. m. the fourth day. From Salt Lake City, the route will be by way of the Feather River Canyon.

Utah State Medical Association

The twenty-ninth annual meeting of the Utah State Medical Association will be held at Salt Lake City, June 20-22. A splendid program has been arranged, with contributors from all parts of the country, each of whom is eminent in his own special field of practice. Physicians en route to the annual session at San Francisco are invited to stop off at Salt Lake and visit the Utah State Medical Association.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Dr. Dinsmore's Successor Named.—Dr. John C. Bragg, Albany, president of the Morgan County Medical Society, has been elected to the board of health to fill the vacancy caused by the death of Dr. William M. Dinsmore.

ARKANSAS

Hospital News.—The last session of the Arkansas Legislature appropriated $75,000 to establish a tuberculosis sanatorium for negroes. There was also an appropriation of $75,000 for additional buildings at the State Tuberculosis Sanatorium at Booneville. This will increase the present capacity, which is 184, to 260 beds. The Masonic order of the state has plans for a $50,000 fire-proof building at the State Sanatorium for Tuberculous Children. When these buildings are completed, the capacity of the sanatorium will be 300.

CALIFORNIA

Faculty Changes at Stanford University.—The following promotions and appointments in the clinical staff of Stanford University School of Medicine, San Francisco, have recently been announced: Dr. Sylvan L. Haas, assistant clinical professor of surgery, assigned to orthopedics; Dr. Harvey S. Hunsberger, clinical instructor in medicine; Dr. J. Walter Jones, clinical instructor in surgery; Dr. John J. Kingston, clinical instructor in medicine, assigned to pediatrics; Dr. Mary H. Layman, assistant clinical professor of medicine, assigned to pediatrics; Dr. Mary J. Mentzer, clinical instructor in medicine; Dr. Philip Hale Pierson, assistant clinical professor in medicine, assigned to tuberculosis; Dr. Merton James Price, clinical instructor in surgery, assigned to otology, rhinology and laryngology; Dr. Joseph A. Sampson, clinical instructor in medicine, assigned to pediatrics; Dr. William E. Stevens, associate clinical professor in obstetrics and gynecology, and Dr. Wilber F. Swett, clinical instructor in surgery assigned to ophthalmology. Promotions on the academic staff: Dr. Frank Ellsworth Blaisdell, professor of surgery; Dr. William E. Chamberlain, associate professor of medicine, assigned to radiology; Dr. John F. Cowan, professor of surgery; Dr. Ernest C. Dickson, professor of medicine; Dr. Leonard W. Ely, professor of surgery, assigned to orthopedics; Dr. Ludwig A. Emge, associate professor of obstetrics and gynecology; Dr. Harold K. Faber, professor of medicine, assigned to pediatrics; Dr. Henry G. Mehrtens, associate professor of medicine, assigned to neurology; Dr. Robert Ried Newell, assistant professor of medicine, assigned to radiology, and Dr. Albert Victor Pettit, instructor in obstetrics and gynecology. Dr. Charles Haskell Danforth has been appointed associate professor of anatomy.

COLORADO

Ophthalmologic and Otolaryngologic Congress.—The Colorado Congress of Ophthalmology and Otolaryngology will be held in Denver, July 30-31. Plans are being perfected for a graduate teaching course which will be given for a period of two weeks prior to the congress.

DELAWARE

Personal.—Dr. L. August H. Bishop has been reelected president of the board of health of Dover.——Dr. Luther S. Conwell, who has been secretary of the state board of health, will resume private practice at Camden.——Dr. William C. Behen, Dover, was recently honored by Poland with the Cross of the Valiant for services in that country with the American Red Cross Hospital Train No. 1, during the Bolshevik drive on Warsaw in 1920.

DISTRICT OF COLUMBIA

Roentgenologist Loses Hand.—Dr. Thomas A. Groover, Washington, associate professor of roentgenology at George Washington University Medical School, recently suffered the amputation of his left hand and two fingers on his right hand, from extended exposure to roentgen rays.

Medical and Surgical Meeting.—The twenty-fifth annual banquet of the Washington Medical and Surgical Society was given at the Wardman Park Hotel, May 10. Dr. Edward John Beardsley, Philadelphia, was the guest of honor. Officers of the society are: president, Dr. Caryl Burbank; vice president, Dr. Coursen B. Conklin; secretary, Dr. Augustus C. Gray, and treasurer, Dr. Frank E. Gibson.

State Health Officers' Conference.—Following the conference of State and Provincial Health Authorities of North America, which was held in the auditorium of the District of Columbia Medical Association, May 14-15, the twenty-first annual conference of state and territorial health officers with the U. S. Public Health Service was held in Washington, May 16-17. Representatives from thirty-five states attended the conference. Vital statistics, systematization of health laws, malaria and venereal disease control, maternity and infant hygiene, and rural health work were among the subjects discussed.

GEORGIA

"Ductless Gland" Clinic.—There has been opened in Atlanta a clinic to be known as the Good Samaritan Clinic, devoted exclusively to disorders of the ductless glands. It is to be operated on a strictly charity and nonsectarian basis. It is supported by a group of prominent capitalists who form its board of trustees. Twenty physicians and one orthodontist compose its medical staff. Clinics will be conducted daily.

ILLINOIS

Personal.—The Morgan County Tuberculosis Board has announced that Dr. Francis M. Roberts, Chapin, has been appointed superintendent of Oak Lawn Sanatorium, Jacksonville.——Dr. James B. Hundley has been appointed city health officer of Danville, to succeed Dr. William C. Dixon, who resigned, May 14.——Dr. Robert J. Burns has been appointed health commissioner of Freeport.

Society News.—Druggists, dentists and physicians of Henry, Stark, Knox and Bureau counties gave a dinner in Kewanee, May 11, in order to discuss proposed legislation to restore former methods of state supervision through the various professional boards. Dr. Charles Humiston, formerly president of the Chicago Medical Society and the state medical society; Samuel L. Antanow, president of the Illinois Pharmaceutical Association, and G. Walter Dittmar, D.D.S., former president of the Illinois State Dental Society, gave addresses.——A meeting of the Iowa and Illinois Central District Medical Society was held, May 24, in Moline. This

meeting, which is one of the four held every year, was presided over by Dr. Frederick H. Lamb, Davenport, Iowa. Dr. James B. Herrick, professor of medicine, Rush Medical College, Chicago, and Dr. Albert H. Byfield, professor of pediatrics, State University of Iowa College of Medicine, Iowa City, gave addresses.

Chicago

Fine for Physician.—According to reports, Dr. James H. Lyon was fined $1,500, May 18, following conviction of violation of the Harrison Narcotic Law. It was stated at the trial that Dr. Lyon had issued, during a period of fourteen days, nearly 2,500 prescriptions, calling for 71,636 grains of morphin.

Personal.—Dr. Fuad Bey, member of the Turkish nationalist assembly from Angora, former minister of health and public works of Turkey, arrived in Chicago, May 24. He is touring the United States to study social conditions, particularly with reference to children.——Dr. Julius A. Toren, Chicago, gave an address on the "Diagnosis of Oral Infection by Blood Examination" before the Mercer County Medical Society and the county dental society at Trenton, N. J., May 10.

Opinion on Quarantine in Venereal Disease.—The city law department has been asked for an opinion by Chief of Police Collins and Health Commissioner Bundesen as to whether the health department has the authority to hold in quarantine persons arrested in disorderly houses until they can be examined for evidence of contagious disease. The chief of police states that this might amount to a refusal of bail and would thus be illegal. The health commissioner holds that such action is necessary to reduce venereal disease in the city.

Annual Report of United Charities.—According to the sixty-sixth annual report of the United Charities, issued May 22, the sum of $663,877 was paid out between Oct. 1, 1921, and Sept. 30, 1922. The organization aided 12,076 families, at a cost of $344,755. Of this amount $105,884 was spent for the employment of superintendents, social workers, interpreters, visiting housekeepers and clerical help; $23,068 for the maintenance of ten district offices, and $46,036 for general administration and the maintenance of general offices.

Hospital News.—A new woman's home and hospital will be erected in Chicago by the Salvation Army at a cost of $250,000.——It was announced, May 22, that St. Luke's Hospital will launch a drive, June 11-16, to collect $2,500,000 for the erection of a nineteen-story addition to the hospital buildings. The institution now has accommodation for 400 patients.——Ground was broken at Riverside, May 22, for the new $70,000 home for British aged to be erected under the auspices of the Daughters of the British Empire of the United States. Samuel Insull presented the organization with the eight acre plot.

Society News.—The Chicago Tuberculosis Society held its last meeting of the season, May 10, at which the following officers were elected: president, Dr. Clarence L. Wheaton; vice president, Dr. Alfred E. Owens, and secretary-treasurer, Dr. Hermann J. Achard (reelected).——At the annual meeting of the Chicago Neurological Society, May 14, Dr. Julius Grinker was elected president; Dr. Ralph C. Hamill, vice president, and Dr. Lewis J. Pollock, secretary-treasurer.——Dr. Lydia M. DeWitt was elected president of the Chicago Pathological Society at the annual meeting, May 19. Dr. William F. Petersen was elected vice president, and Dr. George H. Weaver, secretary.

INDIANA

School Closed for Smallpox.—The Central High School, Fort Wayne, was closed, May 10, by the city board of health following the discovery that a student had smallpox. There are twenty-three cases of smallpox in the city at the present time. Seven of the patients are at the isolation hospital.

KENTUCKY

Physician Vindicated.—Dr. John P. Huff, Olive Hill, whose narcotic license was recently revoked and his supply of blanks and morphin confiscated by a revenue officer, demanded an investigation of the charges. This resulted in restoring his loss.

Society News.—At the fifty-third annual meeting of the Southwestern Kentucky Medical Association in Paducah, May 9, Dr. Herbert H. Hunt, Mayfield, was elected president; Dr. Vernon Blythe, Paducah, secretary, and Dr. James T. Reddick, Paducah, treasurer.

LOUISIANA

Personal.—Dr. George E. Beyer, entomologist of the state board of health, New Orleans, formerly adjunct professor in biology at Tulane University School of Medicine, has been requested to aid in stamping out malaria in San Domingo. Dr. Oscar Dowling, president of the state board of health, has granted Dr. Beyer a leave of absence.——Dr. John F. McHugh, Mansfield, has resigned as health officer of De Soto Parish.

MAINE

New Hospital for Caribou.—Bids closed, May 5, for the erection of a $50,000 hospital building in Caribou.

Personal.—Dr. Cyrus C. Sturgis, Boston, gave an address before the Androscoggin County Medical Society at Lewiston, May 8, on "Relationships of Goiter."——Dr. Stephen E. Vosburgh, superintendent of the Maine School for the Feebleminded, West Pownal, delivered an address before the York County Medical Society at Biddeford, April 5.

MARYLAND

Personal.—Dr. Howard A. Kelly presented a Della Robbia Bambino to the Babies' and Children's Clinic at the University of Maryland on May 29.

Instruction in Social Service Study at Johns Hopkins University.—Opportunity for extensive training in the study of diseases, surgical and psychiatric problems and medical social problems was announced, May 5, by Johns Hopkins University in connection with its study program planned for instruction in social service for the academic year, beginning October 2. Fifteen new courses of training will be available to social economics students, embracing social law, child welfare, social service organization, delinquency and probation, social statistics, immigrant peoples and the history and development of social work. The new courses will lead to the degree of master of arts, but special students will be admitted without reference to attaining a degree. The following staff of instructors was announced: Dr. Richard A. Bolt, general director of the American Child Hygiene Association; Francis Lee Dunham, psychiatrist of the Maryland Child Labor Commission of the state industrial schools; Courtney Dinwiddie, executive secretary of the National Child Health Council; John W. Lewis, director of Americanization of the Baltimore School Board; Elmer V. McCullon, Ph.D., professor of biochemistry, Johns Hopkins School of Hygiene and Public Health; Dr. Adolf Meyer, professor of psychiatry, Johns Hopkins Medical School; Dr. Esther L. Richards, associate professor of psychiatry at Johns Hopkins Medical School; William O. Weyforth, Ph.D., and Broadus Mitchell, Ph.D., of the Johns Hopkins University, department of political economy.

MASSACHUSETTS

Physician Wins Suit.—In the suit for $20,000 damages brought by Peter Kos against Dr. Robert R. Brault, New Bedford, alleging negligence in treating an infant child of the plaintiff, the jury brought in a verdict for the defendant.

Mental Hygiene Unit Organized.—A New Bedford unit of the Massachusetts Society for Mental Hygiene was organized, May 9. Dr. Frank M. Howes, secretary of the medical staff of St. Luke's Hospital, was elected president. A mental hygiene clinic was opened six weeks ago in New Bedford, in charge of Dr. Samuel Tartakoff.

New Chemistry Building at Harvard.—Edward Mallinckrodt, St. Louis, president of the chemical works of that name, has donated $500,000 toward the construction of new chemical laboratories for Harvard University, Boston. The building, which will be erected between the new lecture hall and the university museum, will be known as the Mallinckrodt Laboratory.

Personal.—Dr. Oscar M. Schloss has resigned from the Children's Hospital, Boston, to occupy the position of professor of pediatrics in the Cornell University Medical School, and to take charge of the New York Nursery and Child's Hospital, New York.——Dr. Edward Waldo Emerson, Concord, son of Ralph Waldo Emerson, unveiled a marble bust of his father in the Hall of Fame of New York University, May 22.

Public Health Conference.—At the public health conference held in Springfield, April 26-28 (THE JOURNAL, April 14, p. 1081) the following officers were elected: president, Dr. Edward O. Otis, Boston; vice president, Dr. Parker M. Cort,

Springfield; honorary presidents, Major-Gen. Clarence R. Edwards, Westwood, Dr. Eugene R. Kelley, Boston, and Cardinal O'Connel, Boston, and Robert V. Spencer, Newton. Sixteen organizations interested in public health participated in the conference.

History of Medical Society to Be Published.—A 400 page, illustrated book, entitled "History of the Massachusetts Medical Society, 1781-1922," compiled by the secretary, Dr. Walter L. Burrage, Boston, will be published in October. Brief biographies of the founders and of those who have been chiefly concerned in promoting the interests of the organization during its 142 years are some of the important features. The illustrations include some of these men, the chief meeting places, and reproductions of old documents.

James Marsh Jackson League.—The Tide Over League with headquarters in Boston will hereafter be known as the James Marsh Jackson League, Inc., in honor of the late Dr. J. M. Jackson. The organization cares for convalescents who, upon leaving the hospital, are not physically able to resume at once their former occupation. It gives convalescents light work in their homes. A school of applied arts is maintained, where individual instruction is given to students in the various handicrafts; the league also cares for convalescents from chronic disease who need both money and occupation for longer periods.

MICHIGAN

Sanatorium Destroyed by Fire.—The Otter Lake Sanatorium, Otter Lake, which was about to be taken over by the American Legion to be used as an orphanage, was destroyed by fire, recently, the loss approximating $80,000.

Chiropractor Fined.—It is reported that Ward F. Miller, chiropractor, of Shepherd, was recently found guilty of violation of the state medical registration law and was sentenced to forty-five days in the county jail and fined $150.

Veteran Physicians Honored.—The Lapeer County Medical Society tendered a dinner at Imlay City in May to Drs. George W. Jones of Imlay City, and William Blake of Lapeer, in recognition of their long years of practice in the county. Both physicians are Canadians. Dr. Jones is more than 85 years of age and has served as village postmaster for several term. Dr. Blake located in Lapeer County about forty-five years ago and served as mayor of Lapeer.

MISSOURI

Hospital Dedicated.—The new Lloyd Building, one of the three additions to the Missouri State Sanatorium, Mount Vernon, was dedicated, May 12.

"Doctor" Arrested.—The health department of St. Louis caused the arrest, May 4, of C. Edward Barnett on a charge of practicing medicine without a license. Barnett styled himself a doctor of naprapathy.

Personal.—Dr. James H. Parker of the East Louisiana Hospital for the Insane, Jackson, La., has been appointed superintendent of Hospital No. 4 at Farmington, to succeed Dr. Ethan E. Brunner, recently appointed superintendent of the Colony for Feebleminded, Marshall.——Dr. Francis E. Cullen, senior physician at the City Hospital, St. Louis, has been appointed superintendent of the Isolation Hospital, to succeed Dr. Eugene A. Scharff, who was recently appointed superintendent of the City Hospital.——Dr. Robert M. Wilson, superintendent of the Kwangju Leper Hospital, Korea, gave an address at the Washington University School of Medicine, St. Louis, May 9.

NEBRASKA

State Medical Meetings.—The annual meeting of the Nebraska State Medical Association was held in Lincoln May 15-17. The following officers were elected to serve from next January 1, as is the custom of the association: president, Dr. Morris Neilsen, Blair; vice presidents, Drs. Frank Tornholm, Wahoo, and William J. Douglas, Atkinson, and secretary, Dr. Roy B. Adams, Lincoln (reelected). The next convention will be held in Omaha.——Dr. Emelia H. Brandt and Dr. Reisa G. Wohl, both of Omaha, were elected president and secretary-treasurer, respectively, of the Nebraska Women's Medical Association, at the annual meeting in Lincoln.

NEW YORK

State Medical Meeting.—At the one hundred and seventeenth annual meeting of the Medical Society of the State of New York in New York City, May 22-24, Dr. Orrin S. Wightman, New York City, was elected president for the ensuing year. Dr. Edward Livingston Hunt was reelected secretary.

Hospital News.—St. Christopher's Hospital for Babies has been absorbed by the Brooklyn Hospital, and its resources have become the St. Christopher's Foundation for Babies at the latter institution.

Society News.—At the annual dinner of the Flatbush Medical Society in Brooklyn, May 16, Dr. George A. Merrill was elected president; Dr. Samuel L. Fisher, vice president, and Dr. William F. C. Steinbugler, secretary.——At the annual meeting of the New York Surgical Society, April 29, Dr. Eugene H. Pool was elected president, and Dr. Fordyce Barker, St. John, secretary, for the ensuing year.——Owing to the conflict of dates with the meeting of the house of delegates of the state medical society at the New York Academy of Medicine, the regular May meeting of the Medical Association of the Greater City of New York will be omitted, and a special meeting will be held jointly with the Queens County Medical Society, June 5, at Flushing, L. I. ——The section of laryngology and rhinology of the New York Academy of Medicine advanced its meeting date to May 22 for the same reason, when it entertained the members of the nose and throat section of the state society.——At the annual meeting of the Women's Medical Society of New York, in New York City, May 21, Dr. Mary E. Dunning Rose, New York, was elected president; Drs. Julia K. Qua, Amsterdam, Grace A. B. Carter, Rochester, and Julia G. McNutt, Albany, vice presidents; Dr. Anna H. Voorhis, Yonkers, secretary, and Dr. Florence A. Sherman, Albany, treasurer.

New York City

Deaths from Tuberculosis.—The New York Tuberculosis Association stated that since January 1 there have been 1,613 deaths from tuberculosis in various forms in the city, as against 1,590 for the corresponding period in 1922.

James Buchanan Brady Foundation.—Several hundred patrons of the Society of the New York Hospital were guests, May 12, of the urological department of the New York Hospital, which occupies one floor in the private patients' building. This department was founded by the late James Buchanan Brady, who left in his will about $800,000 for that purpose.

Physician Charged with Homicide.—Dr. Henry Russell was held in $10,000 bail in the homicide court, May 10, on the charge of having performed an illegal operation. The charge had previously been dismissed by Magistrate Oberweger in the West Side Court. The complaint, entered by the Presbyterian Hospital authorities, claims that Dr. Russell performed the operation at his office, and that the condition of the patient became such that she was taken to the hospital, where a second operation was required.

Personal.—Dr. William V. P. Garretson has resigned as attending neurologist to the Reconstruction Hospital, New York.——Dr. Fred H. Albee sailed for Europe, May 16, to attend a congress of surgeons meeting in Amsterdam. ——Dr. S. Josephine Baker has resigned as director of the bureau of child hygiene, after twenty years' service in the health department, on account of ill health.——Dr. Fred Wise and Dr. Isadore Rosen have been appointed assistant professors of dermatology and syphilology at the College of Physicians and Surgeons, Columbia University.

Hospital News.—Work will start in the near future on a building for the new Samaritan Hospital on the present site. The new structure will cost about $250,000, and accommodate 250 patients. The building will be six stories in height, will contain four operating rooms, a maternity department and sun parlors. The committee plans to maintain an ambulance service equal to that of the larger institutions in Manhattan. ——The new neurologic wards of Mount Sinai Hospital (forty beds), endowed by Messrs. Samuel and Harry Sachs, were opened, May 1.——Beth Israel Hospital held its annual meeting on May 15. In addition to the presentation of the annual report and the election of officers, Dr. Lewellys F. Barker delivered an address.

OREGON

Personal.—Dr. Richard B. Dillehunt, dean of the University of Oregon Medical School, has been elected surgeon-in-chief of the Portland unit of the Shriners' hospitals for crippled children.

Junior League Aids Clinic.—The Portland Junior League has raised $11,000 for the support of the children's orthopedic clinic at the University of Oregon School of Medicine, Port-

land. The clinic is held in the patient department of the medical school at the Portland free dispensary. The Junior League purchased all the necessary equipment for the clinic.

PENNSYLVANIA

Personal.—Dr. Franklin E. Sass, Boswell, has been appointed medical director of Somerset County, to succeed Dr. Charles P. Large.——Drs. Jacob P. Frantz, John H. Woolridge, George E. Mauk and Harry A. Woodside were injured in an automobile accident while returning to their homes in Clearfield from a medical meeting, May 10.——Dr. J. S. Fraser, Edinburgh, Scotland, addressed the section on otology and laryngology of the College of Physicians of Philadelphia, May 18, on "The Route of Infection in Cases of Meningitis Associated with Middle Ear Suppuration in Which Neither Labyrinthine Suppuration nor Extradural Abscesses are Present."——The Camden County Medical Society tendered a testimonial dinner to Dr. Daniel Strock, Camden, May 9, at Delair, on his retirement as secretary of the society, following twenty-five years of service.——Dr. W. P. Nolan, Jeannette, has resigned as chief of the State Tuberculosis Clinic at Greensburg.

Philadelphia

Smallpox Quarantine Extend.—A police quarantine of the section bounded by Ontario, Venango, Broad and Sixteenth streets was established as a result of two more cases of smallpox therein reported to the department of public health. ——Extension of the quarantine following discovery of a number of smallpox cases in a tenement near Ninth and Vine streets was ordered for a time, May 21, while physicians, working under Dr. A. A. Cairns, chief medical inspector of the bureau of health, vaccinated more than 700 persons in the district bounded by Tenth, Twelfth, Vine and Callowhill streets.

Changes at Woman's Medical College.—Additional appointments to the faculty of the Woman's Medical College of Pennsylvania (THE JOURNAL, May 19, p. 1463) have recently been announced: Dr. Alice E. Johnson, clinical professor of psychiatry; Drs. Mabel H. Pearson and Miriam Bell, instructors in pediatrics; Dr. Catherine Barnaby, instructor in clinical neurology. Dr. Martha Tracy has been reappointed dean of the medical school. It was decided to reduce the major faculty from twenty to sixteen members. The incorporators, instead of the faculty, will appoint the dean. A joint committee of faculty and incorporators on promotion and tenure of office has been established.

TENNESSEE

Society News.—At the annual meeting of the Middle Tennessee Medical Association in Lebanon, Dr. Dave R. Pickens, Nashville, was elected president; Dr. Byrd S. Rhea, Lebanon, vice president, and Dr. H. H. Shoulders, Nashville, reelected secretary-treasurer.

Personal.—Dr. Herbert Acuff, Knoxville, was recently elected president of the Tennessee Antituberculosis Association.——Dr. Fenton L. Husbands, Memphis, has been appointed superintendent of the Blytheville Hospital, Blytheville, Ark., which will open this month.——Dr. J. B. Bond, Martin, formerly superintendent of the West Tennessee Asylum for the Insane, Bolivar, has been appointed superintendent of the bureau of vital statistics of the state board of public health.

VIRGINIA

Memorial to Physician.—A drinking fountain will be erected in Winchester as a memorial to the late Dr. Godfred L. Miller. The fountain will be erected in front of the courthouse. The cost will be about $2,000, of which $1,400 has already been raised.

Improvements at Tuberculosis Sanatorium.—Extensive improvements are being made at Pine Camp, the municipal tuberculosis sanatorium for the city of Richmond. An appropriation of $125,000 from the city and a gift of $15,000 are available. There will be accommodations for ninety-two patients instead of thirty-six, as at present.

Personal.—Dr. John W. Dunn, Richmond, has tendered his resignation as professor of otology, rhinology and laryngology at the Medical College of Virginia, to become effective at the end of this session. He has been made professor emeritus of this branch. Dr. Joseph A. White, now professor of ophthalmology, will have charge of the combined chairs of ophthalmology, otology, rhinology and laryngology, it is announced.——Dr. Louis L. Williams, Jr., Richmond, engaged in malaria control work with the state department of health, has been appointed to represent the United States on the epidemic committee of the League of Nations. Dr. Williams sailed, May 1, for Italy, where he will spend four months studying malarial problems.——Dr. Warren T. Vaughan has resigned as attending physician to St. Elizabeth's Hospital, Richmond. Dr. Vaughan will assume the editorship of the *Journal of Laboratory and Clinical Medicine*.——Dr. William H. Higgins has been appointed head of the medical department, St. Elizabeth's Hospital, Richmond.——Dr. Hack U. Stephenson, Toano, has resigned as a member of the board of governors of state hospitals.——Dr. Samuel E. Weymouth has resigned as president of the Callao State Bank.

WEST VIRGINIA

Personal.—Dr. Almon P. Goff, of the U. S. Public Health Service, arrived in Logan recently to take charge of the Logan County Health Bureau, succeeding Dr. Duvall, who resigned.——Dr. C. W. Kidder, Grafton, has been appointed county health officer of Taylor County.

WISCONSIN

Physicians' Licenses Revoked.—The state board of medical examiners reports that the licenses of Dr. William G. Wheeler and Dr. Frank L. Fancher of Racine have been revoked, both having been convicted of criminal abortion.

Hospital News.—The new 200 bed addition to St. Elizabeth's Hospital, Appleton, will be ready for occupancy this month.——St. Mary's Hospital, Milwaukee, commemorated the seventy-fifth anniversary of its founding, May 15. This hospital was originally established as St. John's Institute and Infirmary, but the name was later changed to St. Mary's.

CANADA

Tuberculosis Resort Burned.—Seventy residences were destroyed, $250,000 damage done, and 400 people made homeless, May 26, by a fire at St. Agatha, a tuberculosis resort in the Laurentian Mountains.

Radium Institute Opened.—The premier of the province of Quebec formally opened the new radium laboratory at the University of Montreal, recently. A demonstration was held in the amphitheater of the university. The institute was made possible by a grant of $100,000 by the government.

Public Health News.—The board of control, Toronto, Ont., recently voted an appropriation of $5,000 to the Ontario division of the Canadian Red Cross Society, to be used in relief work among typhoid fever sufferers in the town of Cochrane, Ont.——The Ontario division of the Red Cross Society recently shipped a carload of provisions to Cochrane for the relief of seventy-five families rendered homeless by the recent fire and in many cases by the death of the head of the family.

Personal.—Dr. Bruce W. Cannon has been appointed health officer for Coquitlam, B. C.——A banquet was tendered Dr. Francis J. Shepherd, April 14, on the occasion of his fiftieth year of practice, by his former demonstrators of anatomy of McGill University, and his house surgeons in Montreal General Hospital. Dr. Frederick G. Finley, Dr. Shepherd's first house surgeon, presided.——Sir Henry M. W. Gray, surgeon to the Aberdeen Royal Infirmary, Aberdeen, Scotland, has accepted the appointment of chief of the surgical staff of the Royal Victoria Hospital, Montreal.

Hospital News.—The War Memorial Hospital for Sick Children, London, Ont., which is to be operated in conjunction with Victoria Hospital, was informally opened recently, when numerous boys and girls who have been patients at the General Hospital were transferred to the new building. The hospital was financed to a substantial degree with funds raised by the Daughters of the Empire in various parts of western Canada.——The Montreal Hospital for Incurables was destroyed by fire, March 14. There were 350 patients at the time, and all were removed in safety.

University News.—Dr. J. C. Connell, for twenty years dean of Queens Medical College, at Kingston Ont., in his report to the board of trustees of the university, is reported as saying that with the present medical curriculum the study of medicine is practically impossible for financial reasons, for many students who would be otherwise attracted to the profession. He claims the period of training is too long. He believes that medical education in Canada has suffered for lack of cooperation between the medical schools. There has

been no opportunity for conference, and no attempt made to secure a reasonable degree of uniformity in the alteration of requirements. It is now proposed to establish a medical society of the university conference, to meet once a year.

Insulin Instruction in Canada.—Under the auspices of the Alberta Medical Association, the University of Alberta Medical School gave a three day clinic, May 21-23, at Edmonton, to assist physicians in the selection of cases for insulin treatment and in methods of administration, and to familiarize them with effects of overdosage and their treatment. Two lectures and one demonstration were given daily, and all clinics were free of charge. Prof. James B. Collip, professor of biochemistry at the university, codiscoverer of insulin and discoverer of glukokinian, has received an additional $2,000 from the College of Physicians of Alberta to enable him to continue this work. The college previously gave Professor Collip $5,000 for this purpose.——In order to provide additional facilities for the short courses of instruction in the administration of insulin, the University of Toronto Faculty of Medicine is remodeling the old university Y. W. C. A. building, which will be used as a plant for the manufacture of insulin. The courses will be given in the Toronto General Hospital. Only forty physicians can attend each course. About 600 physicians have made applications for the course so far, it is announced.

GENERAL

Narcotic Registration Expires June 30.—Registrations of physicians under the Harrison Narcotic Act expire June 30. Physicians must reregister with the collectors of internal revenue in their respective districts on or before July 1. Members of the Association who are going to the San Francisco meeting will do well to register before leaving home.

Meeting of Subsidiary Examining Boards.—A meeting of the National Board of Medical Examiners will be held, June 26, at 4 p. m. at the Civic Auditorium, San Francisco, for all those who are members of the Subsidiary Board of Examiners in attendance at the session of the American Medical Association, for the purpose of discussing matters with which the subsidiary boards are concerned.

American Gynecological Society's Election.—At the forty-eighth annual meeting of the society in Hot Springs, Va., May 21-23, the following officers were elected for the ensuing year: president, Dr. Barton C. Hirst, Philadelphia; vice presidents, Drs. John O. Polak, Brooklyn, and Herbert M. Little, Montreal; secretary (reelected), Dr. Arthur H. Curtis, Chicago, and treasurer (reelected), Dr. Charles C. Norris, Philadelphia.

Mammalogists Favor Vivisection.—The American Society of Mammalogists, at its fifth annual meeting, May 15, in Philadelphia, unanimously adopted the following resolutions:

"WHEREAS, It is a fact known to all thinking people that most of the great advances in medicine and surgery have been made as a result of experiments on living animals, especially mammals, and

"WHEREAS, It is the belief of our eminent physicians, surgeons and veterinarians and all others having great responsibility for the health of human beings and of animals, that future advances in these fields will be made chiefly as the result of similar experiments, and

"WHEREAS, It is known that these experiments almost invariably are conducted humanely and with a minimum of discomfort to the animals used, and

"WHEREAS, there is an organized movement being carried on by certain misinformed and misguided individuals who seek to prevent or seriously interfere with such experiments, be it

Resolved, That we, members of The American Society of Mammologists, in annual convention assembled in the City of Philadelphia, on the 16th day of May, 1923, are of opinion that, in the best of interests of real humanity, animal experimentation, including vivisection, as practiced in our laboratories today, should continue unhampered."

Commissioner Haynes Warns Against "Moonshine."—A warning to the public regarding the dangerous character of moonshine whisky has been issued by Prohibition Commissioner Haynes. It is based on a statement by chief chemist H. M. Lampert of the department of Wisconsin. The commissioner said:

"The most practical distiller cannot make drinkable whiskey in small amounts, for it is impossible. Even the expertly-made whiskey is at first colorless, nauseating and deleterious. If whiskey made from only the choicest of materials under the most sanitary conditions is raw, crude, harsh in taste and flavor and distinctly unpalatable, what can be expected of whiskey made over night in filthy, unsanitary surroundings, which are especially favorable to wide fermentation and the formation of organic acids, acetone and butyl alcohol, known to be deadly poisons? A small amount of present day moonshine whiskey poured on a varnished surface will work wonders, and it does not take much imagination to picture what it will do to the lining of the human stomach. The moonshiner's primary object is to make and sell his illicit product in the shortest possible time, desiring quantity rather than quality, and he is not interested in the welfare of the consumer, who, if he could see some of the stuff made, would never touch a drop of it."

International Opium Commission Delegates Disagree.—The second meeting since January of the International Opium Advisory Commission of the League of Nations opened in Geneva, Switzerland, May 25. Congressman Stephen Porter Dr. Rupert Blue, Mr. Neville and Bishop Brent represented the United States. China, France, Great Britain, Portugal and Germany accepted the proposal of Mr. Porter that all drug-producing countries reduce their production to strictly medicinal needs, or to one tenth of their present output, but India, Japan and Holland rejected this proposal. The representative of the India office stated that his government would not consider a reduction of its opium production. He asserted that it was impossible to wipe out the opium eating and smoking habit in India, and that the Indian revenue from opium amounted only to $20,000,000 yearly and only 28,000 chests were exported annually. Dr. Blue and his associates will not participate in the work of the league committee unless it accepts the American suggestions, but they will sit several days more in the hope that an agreement will be reached.

LATIN AMERICA

New Hospital in Colombia.—The Hospital Bernett, with twenty beds, was recently opened at Cartagena. Its superintendent and director is Dr. R. Bernett Córdova.

Colombia Surgeon Returns Home.—Dr. J. E. Cavelier, former consul of his country in Chicago, has returned to Colombia after visiting a number of American clinics, and taking postgraduate courses in roentgenology and surgery.

Personal.—Dr. Sanchez Mosquera of Montevideo has left for a visit to his former home in Spain.——Drs. E. Saldaña, J. S. Belaval and R. Soto Rivera have returned to Porto Rico from long stays in the United States.——Dr. P. Gutiérrez Igaravídez of Porto Rico has left for the United States, and likewise Dr. Jacinto Avilés, treasurer of the Porto Rico Medical Association, which is a constituent branch of the American Medical Association.——Dr. P. Palma, professor of surgery at Buenos Aires, has resigned his chair, on account of his health, after seventeen years of incumbency.——The Academia de Ciencias Médicas of Havana has elected Dr. J. A. Presno president, to succeed the late Dr. Santos Fernández. Dr. Presno is professor of surgery in the university and is the founder and director of the *Revista de Medicina y Cirugia*, now in its twenty-eighth year.——The *Brazil-Medico* relates that the government has appointed, as official delegates to the international congresses at Paris and Strasbourg in May and June, Drs. Carlos Chagas, E. Rabello, G. Riedel, E. Borges da Costa, E. Villela and Gastão Cruis.

FOREIGN

Medical Relief in Russia.—The central medical warehouses of the American Medical Relief Administration in Moscow were closed, May 19, after having distributed $7,600,000 worth of medical supplies.

Fund for Gynecologic Research Work.—A fund has been opened in commemoration of the Dutch gynecologist, Hector Threub, to support investigations in gynecology and obstetrics. Subscriptions should be sent to the president of the fund, Dr. C. C. Delprat, 98, Jan Luykenstraat, Amsterdam.

Drug Firm's Licenses Revoked.—Investigation of illicit traffic in dangerous drugs lead the home secretary of Great Britain to cancel the licenses held by Whiffen and Sons, Limited (also trading under the name of J. A. Wink and Company). They will not in the future be allowed to buy, manufacture, sell, or have any dealing in the drugs to which the Dangerous Drugs Act, 1920, applies.

Women's Medical School for India.—The foundation stones were laid, March 26, for a group of four buildings to be erected on vacant ground beside the Queen Mary's College for Women, Madras, India. One of the buildings will be a medical school for women and one a children's hospital. The present Victoria Caste and Gosha Hospital will be replaced by a new hospital, which will be erected alongside the new medical school.

British Otolaryngologists in Sweden.—The section of Oto-Laryngology of the Swedish Society of Physicians invited several representatives of Great Britain to deliver lectures in Stockholm in May. Arthur Cheatle, London, Sir St. Clair Thomson, London, Logan Turner, Edinburgh, and Brown Kelly, Glasgow, attended the session, accepting an invitation from the Dutch Oto-Laryngological Society to attend their meeting at The Hague, May 12-13, on their way to Sweden.

Anthrax Bacilli on Boxes of Oranges.—The medical officers of health for Cardiff, Wales, recently reported that, for the second time, anthrax bacilli have been found in hides bound around orange boxes reaching that city from Spain. The Spanish authorities had previously been requested to stop binding orange boxes with hides. The hides had been forwarded to Spain from India. The Indian government promised that, if the old procedure was not interfered with, the hides would be rendered sanitary, and with that understanding hides were again used.

The Memorial Book of Honor.—At a meeting of the British Medical Association in London, April 18, the committee in charge of the Memorial Book of Honor to members killed in the World War announced that quotations had been selected for the book. Before the list of names it was proposed, by Sir Jenner Verrall, to insert these lines from *Samson Agonistes:*

> "Nothing is here for tears, nothing to wail
> Or knock the breast; no weakness, no contempt,
> Dispraise or blame; nothing but well and fair,
> And what may quiet us in a death so noble."

New British Medical Periodicals.—*Ambulance,* a new quarterly magazine intended as a link between people at home and abroad who are interested in first aid, hygiene and public health, has recently been published by the College of Ambulance, London. The first number contains an article on the origin of ambulance work, by Sir James Cantlie, and one on the use and abuse of tourniquets, by Dr. W. Salisbury Sharpe. ——The first number of the *Journal of Helminthology,* edited by Prof. R. T. Leiper, has recently been received. This journal is published by the helminthology department of the London School of Tropical Medicine, and will appear bimonthly.

Neighbors Complain of Roentgen-Ray Clinic.—Persons living near roentgen-ray clinics in Paris complained that their health is impaired by the far-reaching effect of the rays. An investigation is being conducted under the auspices of the ministry of hygiene by Dr. Béclère of the Paris Academy of Medicine, Dr. Vaillant, Dr. Becquerel, Madame Curie and others as to how far roentgen rays extend, and whether the powerful light beams continue indefinitely, injuring persons in their path at a considerable distance away. Suits were recently started against a physician conducting a roentgen-ray clinic by neighbors who declared that the rays had given them cancer.

League of Nations Health Committee Meets.—The fifth annual session of the hygiene committee of the League of Nations opened in Paris, May 26. The United States is unofficially represented by Surg.- Gen. R. H. Cumming, chief of the U. S. Public Health Service. The principal business of the committee will be to hear reports on tuberculosis, opium, and general health conditions in all countries. The International Health Board of the Rockefeller Foundation is giving the hygiene committee $60,000 a year for a period of three years, and an additional $30,000 a year for five years, for the development of an international office for distributing information regarding epidemics.

Australian University News.—Two bequests, one of £30,000 and one of £20,000 (approximately $140,000 and $95,000, respectively), have been donated to the University of Melbourne Medical School. The council of the university has not yet decided whether the money will be used for research, for the foundation of additional chairs, or for medical units. ——Sir Joseph Verco, Melbourne, represented the University of Melbourne at the octocentenary of St. Bartholomew's Hospital, London.——The Listerian ovation was delivered by Dr. Rothwell Adam, emeritus lecturer on obstetrics and gynecology at the University of Melbourne, before the Australian Branch of the British Medical Association, recently.

Personal.—Dr. Henry H. Dale, London, delivered the Oliver-Sharpey lectures at the Royal College of Physicians of London, May 1 and 3 on the "Activity of the Capillary Blood Vessels and Its Relation to Certain Forms of Toxemia." ——Dr. Thomas J. Mackie, Cape Town, South Africa, was awarded the Straits Settlements gold medal for thesis for M.D. on tropical medicine.——Dr. P. A. Maplestone, lecturer of protozoology at the Liverpool School of Tropical Medicine, has been appointed assistant director of the research laboratory at Sierra Leone.——Professor Bakule of Prague, Czechoslovakia, has arrived in America with a group of handicapped children, whom he has trained to become adept at some gainful occupation. He is giving lectures and demonstrations throughout the country. Under the auspices of the St. Louis School of Occupational Therapy he lectured at Washington University School of Medicine, May 1.——The fifteen Spanish professors who spent four days in Paris recently delivered a number of addresses at the medical school and at society meetings. Among others, Recasens spoke at the Faculté de médecine on the "New Radiotherapy in Gynecology"; Aguilar on "General Infection of Dental Origin"; Goyanes on "Surgery of Vessels," and Hernando on "Action of Drugs on Gastric Secretion." A number of receptions and entertainments were crowded into the busy days before the party left for Bordeaux.——Dr. C. da Costa, professor of histology at the University of Lisbon, recently delivered an address at the Bordeaux Faculté de médecine, his theme being, "The Rôle of Histology in Our Knowledge of the Internal Secretions."——Prof. Fernando Magalhães of Rio de Janeiro, president of the Sociedade de Medicina e Cirurgia, has been decorated by the French government as officer of the Legion of Honor.

Government Services

The Navy Needs Physicians

Unusual opportunities in the form of salary and intern experience are offered to graduate students from Class A medical colleges in the Medical Corps of the Navy. Medical colleges and recent medical graduates are not taking full advantage of opportunities in the Navy Medical Corps. The Navy Department has, for some time, had difficulty in filling the Medical Corps. Under the existing policy of the department, graduates from Class A medical colleges may enter the corps, on passing an examination confined entirely to medical subjects, and immediately be commissioned and receive an annual salary of approximately $3,000 as interns at any of the large base hospitals of the Navy. Interns are not sent on sea duty the first year. They have the advantage of unusual hospital experience and an immediate income greater probably than that which most young physicians just out of college have. At this time of year when students are graduating from medical colleges, the opportunity in the Navy should have its strongest appeal. Information in detail on this subject can be had on application to the Surgeon General of the Navy, Washington, D. C.

Army Medical School Graduation

The Surgeon General announces that the closing exercises of the Army Medical School and the Army Dental School session of 1923 will be held in the auditorium of the New National Museum, Washington, D. C., June 8.

Hospital Authorized

Pursuant to instruction of the Secretary of War, the organization of a hospital, organized reserves, to be known as General Hospital No. 28 (Christian Church Hospital Unit, Kansas City, Mo.) has been authorized.

Veterans' Bureau Course in Tuberculosis Completed

The U. S. Veterans' Bureau Post-Graduate School of Tuberculosis at Hospital No. 41, New Haven, Conn., has completed its first session which began in March of this year. The course was attended by a selected group of physicians of the regular staff of the Veterans' Bureau from different parts of the country. The lectures were delivered by specialists in tuberculosis. The school was established to increase the clinical knowledge of tuberculosis among physicians treating ex-service men. Its administration was in charge of Dr. Stanley M. Rinehart, clinical director of tuberculosis in the bureau. The plan of the school and the intensive course which has been given has been generally approved. Dr. Eugene L. Opie of St. Louis comments:

> After a week spent at the Post-Graduate School of Pulmonary Tuberculosis at New Haven, I have come home with the conviction that the plan of the school is excellent and that it has been carried out with success. I do not know of any plan that would offer better promise of giving men qualified for general practice an accurate knowledge of a complex special subject such as tuberculosis. The intensive course which was given furnished both a fundamental scientific insight into the subject and a practical understanding of the methods of handling the disease. I do not believe that one without the other would have been successful.

Foreign Letters

PARIS

(From Our Regular Correspondent)

May 4, 1923.

A Visit of Spanish Physicians to France

A party of Spanish physicians visited recently the medical schools of the universities of Paris and Bordeaux. The delegation, which was conducted by Professor Recasens, dean of the Faculty of Medicine of Madrid, was composed of Professors T. Hernando, F. Aguilar, L. de la Peña and Márquez of Madrid; Dr. Goyanes, director of the Cancer Institute of Madrid; Dr. José Madinaveitia, chief editor of *Los Progresos de la Clínica*, Dr. Coca, director of the *Medicina Ibera*, and others. The party was welcomed, on arriving in Paris, by Professor Roger, dean of the Faculty of Medicine, together with Professors Bar and Hartmann, and Dr. Cheinisse, of the staff of the *Presse médicale*. The Spanish physicians were later received by the Association générale des médecins de France, where they were greeted by Dr. Chapron, vice president of the association.

During their four days' sojourn in Paris, a number of the Spanish professors delivered addresses, among which those of Professor Recasens and Professor Goyanes attracted particular attention. Recasens spoke at the Faculty of Medicine on the new applications of roentgenotherapy in gynecology, and said in conclusion that, just as, thirty years ago, one could no longer represent himself to be a gynecologist if he was not a surgeon, so today, for a gynecologist to be in the forefront of his specialty, he must understand the physiologic and therapeutic properties of roentgen rays. After his address, Recasens projected on the screen a series of interesting roentgenograms of pregnant women, showing that the positions of the fetus in the uterus are entirely different from what they are represented to be in classic treatises. Professor Goyanes gave a lecture on vascular surgery before the Société de chirurgie of Paris.

Typhoid Fever in Paris

Every year, from July to October, a recrudescence of typhoid is noted in Paris. In explanation of this recrudescence, it is not necessary to assume a seasonal contamination of the drinking water of Paris. The cases, for the most part, develop in Parisians who spend their vacations in rural communities where the drinking water may be badly polluted. But, in addition to the imported cases, there are some that originate in Paris, and thus point to the existence of a permanent source of contagion. We may doubtless assume the presence of germ carriers and also the use of vegetables coming from sewaged land.

When the city of Paris decided to purify the contents of its sewers on an area of land outside the city, it was assumed that the land thus fertilized would be used for pastures or orchards, in order to avoid the contamination of edible products growing on the top of the soil. But the proximity of a large city, easy irrigation, and the brilliant results secured by the Chinese method of employing liquid fertilizers, caused the sewaged land to be used for market gardening. Now it is quite evident that sewage water containing typhoid bacilli cannot without danger be applied to vegetables that are to be eaten, without previous cooking, by persons susceptible to this virus. Clauditz found germs, after several days, on green herbs thus treated which a thorough washing could not remove. The Conseil supérieur d'hygiène also commissioned Dr. E. Marchoux to make an inquiry into the modes of fertilization employed on the sewaged land near the city of Paris. This inquiry showed that, while the larger part of the sewaged area was planted to peas, beans, potatoes, artichokes, leek, celery, cauliflower, carrots, turnips, sorrel and spinach, all of which are cooked before they are eaten, there was a portion of the land where grew certain vegetables and culinary plants that are frequently eaten raw, such as lettuce, dandelions, endive, onions, parsley and radishes. Marchoux recommended that the kinds of herbs and vegetables that may be grown on sewaged land be established by law.

Consequences of the Acquittal of a Charlatan

I referred in previous letters to the career of the "healer" Béziat, who was brought before the court for the illegal practice of medicine and who was acquitted by the correctional tribunal of Villefranche-en-Rouergue and by the Court of Appeals of Toulouse (THE JOURNAL, April 15, 1922, p. 1141, and April 21, 1923, p. 1160). The healer, of course, lost no time in letting the public know of these decisions, concerning which he expressed himself thus:

> It is, in fact, the equivalent of a diploma, with this important difference, that, in order to secure these decisions, actual proofs of efficiency had to be furnished, for it is certainly true that, if numerous and unmistakable cures had not been effected, the correctional tribunal and Court of Appeals would not have acquitted me. The judgment of a tribunal, the opinion of judges who put their conscience above everything, is worth as much as the decision of a medical faculty, it would seem to me. For a court decision it is proofs that count. To secure the approval of a medical faculty, often all that is required is to have spent five years in residence at a medical school while pursuing a life of pleasure.

Fortunately, the Court of Cassation, by reversing the decision of the court of Toulouse, put an end to the insolent triumph of the healer.

An Error in Diagnosis

A few months ago, the correctional tribunal of Evreux acquitted Dr. Vallet of Vernon, who was summoned to appear in court for an error in diagnosis committed in operating on a woman for fibroma when, in reality, the manifestations were due to pregnancy (THE JOURNAL, Dec. 16, 1922, p. 2099). The decision of the court was to the effect that Dr. Vallet was guilty of the crime covered by Article 319 of the Penal Code (homicide through imprudence). A fine of 2,000 francs, payable to the father of the woman operated on, and a further fine of 9,500 francs, payable to the three children of the deceased, were imposed.

Statistics on Public Assistance

From the bureau of the minister of labor has just appeared a pamphlet containing a statistical report on public assistance covering the period from 1914 to 1919. Dec. 31, 1919, the list of those receiving public assistance bore the names of 267,816 aged persons who were either infirm or incurable, 88,022 children and 42,118 mentally defective persons. During the year 1919, public assistance was given also to 616,523 patients, 203,502 puerperants, and 236,207 large families. The bureaus of public charity in forty-one departments gave aid to 254,319 persons. The total amount of gifts and bequests to public institutions and to public welfare was, in round numbers, 17,269,000 francs, from a total of fifty departments.

LONDON

(From Our Regular Correspondent)

May 8, 1923.

The Control of Infectious Diseases in New South Wales

The government of New South Wales has issued a new and elaborate series of regulations for the control of infectious diseases. Every "contact" or carrier must submit to medical examination at such time and place as a health officer, or a physician authorized in that behalf, directs. He may be placed under medical surveillance, or may be isolated and detained in isolation in his own home or in any place, if the health officer deems this necessary to prevent the spread of infection. Any person who has been informed in writing

by the health officer that he is a carrier shall not take part in or be employed in any business connected with the manufacture, preparation, storage, handling or delivery of food or drugs for human consumption, or handle any vessel, receptacle, package, utensil, instrument or thing used in connection with food. The body of a person who has died of an infectious disease shall be enveloped in a wrapper wet with a 1:20 solution of phenol (carbolic acid) or other approved disinfectant. The body shall be placed in a coffin, and the lid of the coffin fastened down within twenty-four hours after death. The joints of the lower part of the coffin must be water-tight. The body must not be conveyed in any other public conveyance than a hearse without previous notification to the owner that the person has died from an infectious disease, and the owner must have the conveyance disinfected after use. The body shall not remain unburied elsewhere than in a mortuary approved by the board of health, longer than thirty-six hours in a municipal district, or longer than forty-eight hours in another district.

Cocain Substitutes Committee

The ministry of health has under consideration the possibility of using substances that might serve the same therapeutic purpose as cocain, but be free from its deleterious properties. It has appointed a committee consisting of anesthetists, surgeons, dentists and pharmacologists to investigate the comparative value of various substitutes for the therapeutic purposes for which cocain is used, and the evidence as to the risk, if any, of such substitutes becoming drugs of addiction.

The Need for Vaccination

The danger that has arisen from the relaxation of the vaccination laws out of consideration for the antivaccinators has been pointed out before. Though we have not suffered from an epidemic of smallpox, local outbreaks are of constant occurrence. Dr. Parkinson, health officer to the Basford Rural District (Nottinghamshire), from which as many as fifty-six cases have recently been admitted to hospital, reports that the disease shows no sign of abatement, and that he does not think that it will for some time, unless more stringent methods of control are taken. The disease is gradually picking out the unvaccinated part of the population. Everything possible is being done to stop its spread, but unless vaccination is made compulsory and the government issues a quarantine order for "contacts," nothing can stamp it out. In certain of the northern and midland counties, outbreaks which began last autumn have not yet abated, and it is exactly in these places that the greatest prejudice against vaccination exists.

No Signs of a Race of Supermen

Lecturing at the Royal Institution, Sir Arthur Keith discussed the question whether mankind was still evolving. He held that changes were taking place more rapidly now than at any former period. The evolution of man could fairly be compared with the evolution of automobiles. In the early days, local makers conformed to local needs, but after a certain period, special standardized types ousted local types. So, too, with man. Certain local types spread across continents and suppressed others, which might have been excellent from an engineering or esthetic point of view, but, through the working of natural selection, they disappeared because they did not meet the needs of the place and time. Twenty years ago, Metchnikoff accused Nature of bungling in her workmanship as regards modern man. He protested against thirty-two teeth as being too many. He resented the existence of the appendix, the cecum and the colon. From his standpoint, these charges could be extended. Every industrial nation had a large "C 3" population. In 20 per cent. of adults, the teeth were so bad as to be useless for mastication. More than 5 per cent. required spectacles, and the same number had chronically diseased ears. Metchnikoff's charge to many sounded justified, but it was only necessary to consider the time required to teach the young, untrained dog that the home was not run to satisfy its particular needs, to realize that the discords of modern life might not be due to Nature's blunderings but to man's stupidity. Five thousand years ago there was not a patch of corn grown in Great Britain; today the poorest child is better fed and sheltered than the best-off child then. We give our digestive tract no rest, either whipping it up with patent sauces or seeking to treat its rebellion with patent pills. It is not Nature that has gone too slow, but man too fast. There is definite evidence that changes are taking place in the human body. Remains in the Museum of the Royal College of Surgeons show that there have been modifications in the formation of the human jaw, of the placing of the front teeth, and of the character of the nose, with the result that the tendency is toward the production of a long, narrow face. As to whether the brain is or is not increasing, no definite answer can be given, because sufficient skulls are not available. The fact is that today not one person in fifty uses his brain to half its capacity, most people having more brains than they know what to do with. There is no sign of a race of supermen appearing in this or any other country, and such evolutionary changes as are taking place are only in matters of detail. It is possible, however, that evolutionary changes are silently at work in the brain, favoring the men and women who have the power to replace the wild inheritance of the jungle by the well-ordered instincts essential to the welfare of modern communities.

VIENNA

(From Our Regular Correspondent)

April 24, 1923.

The Congress of the German Society for Internal Medicine, Vienna, April, 1923

The German Society for Internal Medicine, which meets every two years in Wiesbaden, has arranged to hold its meeting every alternate year in another large German town, and Vienna was chosen for this year. Professor Wenckebach organized the convention. More than 1,400 physicians took part in the proceedings, including visitors from northern Europe, Asia, Italy and the New World, so that this meeting was really international, the first of its kind in Vienna since 1913. The proceedings were grouped under three heads: (1) epidemic (lethargic) encephalitis; (2) hypertension and (3) internal secretion. Two eminent men were asked to give an introductory report on each of these subjects, one dealing chiefly with the anatomic or physiologic, the other with the clinical side of the problem.

In connection with the congress, an exhibition of the latest achievements of chemistry, electrotherapeutics and medical technic was opened, in which the changes brought about by these factors in the medical armamentarium were well illustrated. The blood pressure apparatus, the microscope, the fluoroscope, the roentgenogram and the metabolimeter are now indispensable, and ready made pills and hypodermics are always at hand.

The scientific program was carried out in magnificent surroundings in the reception hall of the former emperors of Austria, which was selected and adapted for the purpose. The municipality of Vienna and the president of the republic gave receptions in honor of the guests; and social gatherings and excursions to neighboring watering places and health resorts in the Alps served to relieve the sober work of the convention. The scientific proceedings lasted from April 9 to 12, with Professor Wenckebach in the chair. As a large

number of papers and reports were presented, with the exception of the introductory papers, ten minutes was allowed for each paper, and discussion was limited to four minutes.

NEED FOR CHANGES IN MEDICAL TEACHING

The proceedings were opened by the president, who, after welcoming the guests, discussed the need for changes in medical teaching. Students, like children, at first are likely to see the characteristic traits of an object and to draw them, but later they lose this ability, because their faculty for observing is hampered by cramming. The medical student must obtain the utmost of knowledge in the shortest possible time, and thus ceases to "observe" without becoming able to form a judgment of his own. He is taught for the examination and not for the purpose of forming his own opinion. Wenckebach therefore emphasizes the necessity for increasing the study of the chief subjects in a more intensive way, with less attention to the manifold specialties. The basis of teaching should be sought in exact observation of the human individual.

EPIDEMIC ENCEPHALITIS

The validity of these remarks was brought home to the audience by the next paper, which showed how careful observation enabled Professor Economo (Vienna) to throw light on a dark problem. He presented a report on epidemic encephalitis, giving the history of previous epidemics (1872 in Germany and 1890 in Italy); he then explained how, after the epidemic of influenza in 1916-1917, he saw about fifty cases of a drowsiness that lasted for weeks and months, which he at once recognized as a separate entity; squint was marked in all cases. One third of the patients recovered, one third died, and the remaining patients drifted into chronic invalidism. Anatomic investigations revealed inflammation of the brain of infective type. Levaditi in Paris, and Doerr in Vienna, discovered simultaneously that the virus is filterable; it can be transmitted to the cornea of a rabbit, where it produces lesions identical with those of herpes febrilis. It must be assumed that the causative agent is the same in the two diseases, but that, for some unknown reason, the virus at times becomes more active and produces encephalitis. Contagiousness is not marked; only in 4 per cent. was contact demonstrated. The contagion seems to be chiefly airborne, and the portal of entry is probably the nasopharynx. Since the first systematic observation, seven years ago, similar reports have been received from all over the world, and it may be stated that the disease is closely associated with grip. Intravenous injections of iodin in large doses control the disease in the acute stage; but against chronic cases we have no remedy. The latter cases show a tendency to sleep, to choreiform movement, to tics or to cataleptic conditions.

Especial interest has been aroused by the last, in which there are disturbances of voluntary innervation or of "will" and "intention" movements (parkinsonian type). These conditions have thrown new light on the function of sleep and intentional movement. We have learned that sleep (and wakefulness) is controlled by a center situated between the optic thalamus and the hypothalamus; lesions there cause a change in the type of sleep: day sleep, protracted sleep or fits of sleeping. Cataleptic conditions, previously associated only with severe mental disease, also have been traced to encephalitic lesions in the ganglions of the diencephalon. Sane persons may show symptoms of a neurosis, previously explained as suppressed or repressed thoughts or desires; these symptoms, however, have an organic basis. It means that "will" is quite outside our psychic processes.

The clinical report on this subject was presented by Professor Nonne (Hamburg). He stated that, in a large number of the 262 chronic cases observed in his clinic, there intervened a stage of comparative normality between the acute and the chronic manifestations, which at times lasted months or even years. Prognosis must therefore always be guarded. Slight attacks of acute encephalitis are also mild in their chronic stage, mostly progressing very slowly. The serious acute cases are more rapid in their later manifestations. Nonne attributes the various symptoms to the presence of a special toxin that affects the nervous centers very much like the metasyphilitic toxin; he also suggests the possibility that all metabolic disturbances are due to toxic lesions of a special center controlling the function of the liver. He divides the chronic cases into three groups: those with a predominance of psychic disturbances; those with changes in the mechanism of movements, and those with metabolic disturbances. A change in character or sentiments is often noted early, and may remain the only symptom. Nonne said that our conception of will has received a severe shock as the result of studies of the lesions in the chronic form of epidemic encephalitis. All that we subsume under the term tonus of muscles, which is paramount in the execution of movements and the assumption of attitudes, takes place in the ganglions of the brain stem, and is beyond the control of consciousness. Tics, spasms, contractures and cataleptic conditions are caused by encephalitic lesions, and are now open to study by pathologists. The parkinsonian complex is explained by these lesions, and we have learned much of the functions of the deep ganglions. Cooperation of muscle groups is necessary for intentional movements, which are impossible if the brain coordination is interfered with. Trophic disturbances, so common after epidemic encephalitis, are due to lesions in the centers for the regulation of metabolism. We observe sudden obesity combined with nervous disorders, and marked emaciation without serious disease; diabetes insipidus, as well as mellitus, are produced by encephalitic lesions in the vicinity of the third ventricle. An animated discussion ensued, in which nearly all speakers agreed with the ideas brought forth in the two reports.

HYPERTENSION

The report on hypertension was delivered by Durig (Vienna) and Vollhard (Halle). The former discussed the problem chiefly from the physiologic side. Normal blood pressure varies with: sex, age, condition of work or rest, psychic factors and numerous other influences; it may be as low as 90 mm. of mercury in sleep, or as high as 160 or even 180 mm. during work. Only permanently high readings of pressure constitute hypertension; routine measurements give only a means of comparison and not absolute figures; we are not in a position to diagnose hypertension simply from a few pressure readings with variable figures. Durig calls hypertension a condition in which the blood pressure is essentially above the normal; it is caused by a disproportion between the blood volume ejected into the circulation and the volume of the outflowing blood, if the capacity of the heart and its muscular force is sufficient. It is not the heart's force that produces high pressure, but the conditions prevailing in the blood vessels, chiefly in the arterioles and capillaries where the fall in pressure principally occurs. If the elasticity of these vessels or their lumen is seriously disturbed, loss of efficiency takes place, for these two factors are chiefly responsible for the normal circulation in the blood vessels. Loss of elasticity means more work for the heart against higher resistance, i. e., more pressure is required. The changes of the lumen are due chiefly to arteriosclerotic processes, functional narrowing or occlusion. In normal cases, the capillary network acts like a suction pump, causing the blood pressure to remain normal. But there exists a hereditary disposition to functional high pressure. Thus far,

however, we cannot say what conclusions should be drawn from high arterial pressure. We cannot give a definite opinion as to the actual conditions prevailing in the total circulation or in the heart.

Vollhard expressed the opinion that blood pressure regulation is intimately connected with the contraction of the blood vessels, and that arterial hypertension is due to spasmodic conditions in the circulatory system. We see two types of patients with high pressure; one is pale, the other, ruddy. This difference cannot be explained by a difference of the force of the heart beat. Vollhard says that in pale patients there is a general spasm of the blood vessels which is absent in the "red" patients. Practically speaking, only renal disease is associated with high blood pressure; but, in a high percentage, the kidney trouble is the cause and not the consequence of high blood pressure. For, in these cases, spasm-producing substances are present in the blood (epinephrin) and only in patients with high pressure and pale face; injection of blood serum from patients with nephritis into the circulation of a guinea-pig causes increased epinephrin action; and we know that nephritic blood contains peptones. Acute nephritis is characterized by spasm of the kidney vessels, which can be cured by adequate treatment. Vollhard quoted the experiment of Dr. Bornstein of Hamburg on himself. He caused a small dose of epinephrin to be injected into his arterial system; syncope followed, artificial breathing had to be maintained for over an hour, albumin appeared in the urine, and the pressure went up to more than 220. Months elapsed before all consequences of this experiment passed away. Chronic nephritis is due mostly to age and perhaps to psychic conditions. In advanced age, the blood vessels lose in elasticity, but increase in capacity. The diminishing force of the heart cooperates with these factors to regulate the blood pressure and keep it at the normal level. If, therefore, the heart continues to work with its former force while the blood vessels lose elasticity, high pressure occurs.

An interesting contribution was the paper by Professor Pal, proving that the chief region for the regulation of blood pressure in the capillaries is the intestinal circulation. Spasmodic conditions there tend to produce acute hyperemia in other parts, especially in the brain. In advanced arteriosclerosis, such a sudden strain thrown on this delicate system of blood vessels may easily produce a hemorrhage. High pressure is often observed in patients suffering from constipation, mental worry or as an hereditary trait. Careful attention to digestion is one of the chief factors in prophylaxis.

ENDOCRINE DISTURBANCES

Disturbances of endocrine glands commanded special attention. An afternoon was set apart for demonstrating interesting cases, and patients from all clinics were placed at the disposal of those interested. Of the large number of papers dealing with this subject, the following may be mentioned: Professor Singer on sclerodermia (with demonstration of cases); the experience of gynecologists and pathologists seems to prove that a disturbance in the function of the ovary and the thyroid combine to bring about this clinical entity. Treatment by internal exhibition of thyroid and ovarian substance, with later subcutaneous injections, brought about a most satisfactory result in a case of Singer's (diffuse sclerodermia in a woman, aged 29). The patient is not cured, but her skin is now mobile, she can eat and has gained 10 pounds (4.5 kg.); Dr. Liechtenstern reported a series of twenty-eight transplantations of sexual glands (ovaries and testes). In six cases treated after complete castration, the result was very good even after from three to eight years. The abdominal skin is a good place for testing such grafts.

Remarkable cases of pathologic growth were demonstrated by Dr. Bauer: a case of gigantism after encephalitis; a dwarf, aged 23, who stopped growing after the removal of a tumor at the base of the tongue, when myxedema set in; a few other dwarfs with unknown histories, all of the type of hypothyroidism; a case of a man, aged 53, with arthritis deformans that started at the age of 7 and stopped further growth; a woman with spondylitis, and a woman who within three months lost 30 kg., or 50 per cent. of her weight and all her hair. Abnormalities of the distribution and growth of hair were discussed by Professors Redlich and Falta; a few cases of pathologic loss of hair were shown, in which hypofunction of thyroid, pineal and pituitary glands was present. Treatment with extracts of these glands was satisfactory in some cases. In acromegaly, roentgenotherapy had proved useful. The trophoneurotic disturbances after epidemic encephalitis were discussed by Wagner Jauregg, who also demonstrated a case of adiposity belonging to that group. Eppinger and Pineles read a paper on increase of blood pressure in tuberculosis of the suprarenals and other affections. A series of women suffering from pathologic conditions due to disturbances of menstruation were demonstrated by Dr. Aschner. He differentiates types of endocrine change in women into: chlorotic anemia, plethora, infantilism, adiposity, and masculine habit with abnormalities of hair growth; he strongly recommends the use of ovarian substance, with thyroid extract. Professor Pirquet showed children with trophoneurotic and endocrine disturbances; among them a boy, aged 3½, with fully developed secondary sexual characters; and a girl born with a weight of 790 gm., who is now 10 years old and perfect in every respect.

MISCELLANEOUS TOPICS

Among other papers presented to the congress, Dr. Stern showed how patients with total laryngectomy are taught to speak by using the stomach as a reservoir for air. The air is easily swallowed and the voice, produced after the fashion of ventriloquists, is sufficient for ordinary conversation. Drs. Molnar and Friedrich (Budapest) demonstrated their investigations of the motility of the stomach in connection with mastication. Roentgenograms were shown to prove that the contents of the stomach are emptied into the duodenum according to their chemical composition, the rapidity being increased by lessened consistency; fats remain longer than other substances, and carbohydrates are emptied most rapidly. Gaseous osmosis and gas metabolism, the output of urea and psychic influence on digestion, were commented on by physicians from Belgrade and Prague.

A sensation was caused by a preliminary report by Wenckebach on the treatment of angina pectoris by dividing the nervus depressor cordis branch of the vagus that supplies the aorta with sensory fibers. Acting on a theory of Eppinger, Dr. Hofer performed this operation in six cases, with excellent results. As the depressor nerve has several roots, the operation is difficult, but the division causes the disappearance of the pains; it is not yet clear whether the favorable result is due to the fall in blood pressure, or the loss of sensibility of the aorta.

A large number of papers dealt with the problems of tuberculosis. While many experienced physicians advocated artificial pneumothorax, Jötze (Frankfort) and many surgeons resort to phrenicotomy; the operation is simple, and its results are permanent. A combination of the two methods was advocated by Kraus. The latest method of applying tuberculin by inunction (percutaneous) encountered strong opposition from the majority of those discussing the problem. Thoracoplasty and other surgical methods of treatment are still much in favor, especially in pleuritic complications, while the use of fillings is now out of date.

Marriages

LAWRENCE M. RIORDAN, St. Louis, to Miss Caroline Robinson Hardy of Waterloo, Ill., May 10.

ROBERT STANLEY KEMP, Boston, to Miss Kathryn B. Youse of Sandusky, Ohio, May 24.

ALBERT WOLDERT, Tyler, Texas, to Miss Elva Buford of Henderson, May 6.

CARSON K. GABRIEL, Payson, Ill., to Miss Mabel Miller, of Chicago, April 28.

Deaths

David Webster, New York; Bellevue Hospital Medical College, New York, 1868; died, May 26, following a long illness. Born in Cambridge, Nova Scotia, Canada, July 16, 1842, Dr. Webster served as professor of ophthalmology at the New York Polyclinic Medical School; Dartmouth Medical College, Hanover, N. H.; as clinical assistant in ophthalmology and otology at the Columbia University College of Physicians and Surgeons, New York, and on the staffs of the Manhattan Eye, Ear and Throat Hospital, Hospital for Ruptured and Crippled, New York Skin and Cancer Hospital, New York, Brooklyn Eye and Ear Hospital, Brooklyn, and the Hackensack Hospital, Hackensack, N. J. He was a member of the American Academy of Ophthalmology and Oto-Laryngology, the New York Ophthalmological Society, the international societies of ophthalmology and otology, and was formerly president of the Medical Society of the County of New York.

James Wallace Van Dusen ⊕ Lieutenant-Colonel, U. S. Army, Fort Benning, Ga.; University of Michigan Medical School, Ann Arbor, Mich., 1896; died, May 2, at the Walter Reed General Hospital, Washington, D. C., of ileus paralyticus. Dr. Van Dusen was born in Ohio in 1871. He entered the regular army as assistant surgeon, July 15, 1901, and was commissioned lieutenant-colonel, May 15, 1917. During the World War he held the temporary rank of colonel.

Lamme Steele Givens ⊕ Cynthiana, Ky.; Medical College of Ohio, Cincinnati, 1887; member of the American Academy of Ophthalmology and Oto-Laryngology; formerly president of the Harrison County Medical Society; at one time county coroner; aged 57; died, May 5, of cerebral hemorrhage.

Wallace E. Newark, Charlotte, Mich.; Toledo Medical College, Toledo, Ohio, 1888; member of the Michigan State Medical Society, and the Radiological Society of North America; formerly proprietor of the Charlotte Sanatorium; aged 62; died, May 5, following a long illness.

Henry Clay Kerrick, Brocton, Ill.; Louisville Medical College, Louisville, Ky., 1887; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; aged 62; died, May 11, at the Paris Hospital, Paris, of a stab wound in his chest, self-inflicted.

James H. Taulbee, Lexington, Ky.; Louisville Medical College, Louisville, 1894; member of the Kentucky State Medical Association; served in the M. C., U. S. Army, during the World War; aged 51; died, May 3, of pneumonia, at West Point, N. Y.

Benjamin I. Poland, Danville, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1883; Atlanta (Ga.) Medical College, 1895; member of the Illinois State Medical Society; on the staff of St. Elizabeth's Hospital, where he died, May 12.

Thomas Edward Bruce, Clinton, Ind.; Vanderbilt University Medical Department, Nashville, Tenn., 1893; aged 60; died, May 15, at Augustana Hospital, Chicago, following an operation for carcinoma of the kidney.

Amanda Helen Miller, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1892; member of the Ohio State Medical Association; aged 61; died, April 28.

Richard Hazlewood Moss, Hodgenville, Ky.; University of Louisville Medical Department, Louisville, 1874; member of the Kentucky State Medical Association; aged 74; died, March 15, of cerebral hemorrhage.

Charles Adam Leathers, Lawrenceburg, Ky.; University of Louisville Medical Department, Louisville, 1882; formerly president of the Ohio State Pharmaceutical Association; aged 63; died, May 7, of tuberculosis.

Charles Andrew Mackey, Truro, Iowa; Barnes Medical College, St. Louis, 1902; member of the Iowa State Medical Society; served in the M. C., U. S. Army, during the World War; aged 55; died, April 28.

Charles Ross Lightfoot, Cloverport, Ky.; St. Louis College of Physicians and Surgeons, St. Louis, 1902; member of the Kentucky State Medical Association; aged 48; died suddenly, May 10, of heart disease.

Royal Hart Gerard, Crawfordsville, Ind.; Medical College of Indiana, Indianapolis, 1899; aged 48; died, May 12, at St. Anthony's Hospital, Terre Haute, of injuries sustained in an elevator accident.

William S. Ogle, Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1900; formerly professor of hygiene and orthopedic surgery at his alma mater; aged 59; died, May 8.

William Holland Heron, Washington, D. C.; Howard University School of Medicine, Washington, 1887; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 56; died, May 12.

Jacob R. Lehman ⊕ Mountville, Pa.; Jefferson Medical College of Philadelphia, 1882; formerly president of the Lancaster County Medical Society; aged 68; died, May 9, of heart disease.

Edgar Henry Knittle, Waterloo, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; member of the Iowa State Medical Society; aged 49; died, May 17, of heart disease.

Andrew Jackson Bostater, Montpelier, Ohio; University of Michigan Medical School, Ann Arbor, Mich., 1869; Civil War veteran; formerly a druggist; aged 88; died, April 21, of senility.

Benjamin H. Rogers, San Diego, Calif.; Jefferson Medical College, Philadelphia, 1888; member of the Medical Society of New Jersey; aged 61; died, May 2, following a long illness.

Thomas Sargent Roberts, Chicago; Jefferson Medical College, Philadelphia, 1887; aged 67; died, May 12, at the Cook County Hospital, of heart failure due to an overdose of drugs.

Thomas Anderson Drake, Prairieton, Ind.; Rush Medical College, Chicago, 1890; aged 55; was drowned, May 15, when the automobile in which he was riding plunged into a creek.

Robert Lee Combs, Cooper, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1890; member of the State Medical Association of Texas; aged 58; died, May 6.

James Sylvester Collins, Carlinville, Ill.; Rush Medical College, Chicago, 1880; member of the Illinois State Medical Society; formerly mayor of Carlinville; aged 66; died, May 7.

Andrew Jackson Robinson, Denver; Rush Medical College, Chicago, 1878; formerly on the staff of the Citizens' Hospital, Aspen; aged 76; died, May 10, of paralysis.

Edgar S. Thompson, Wisner, Neb.; Creighton Medical College, Medical Department of the Creighton University, Omaha, 1911; aged 41; died suddenly, April 27.

Salathiel Watts Williams, Gallipolis, Ohio; Miami Medical College, Cincinnati, 1881; member of the Ohio State Medical Association; aged 67; died, May 11.

Paul Charles Rietz ⊕ Evansville, Ind.; Rush Medical College, Chicago, 1898; on the staff of the Deaconess Hospital; aged 48; died, May 10, of chronic nephritis.

Frederick Edmister, Detroit; Bellevue Hospital Medical College, New York, 1883; member of the Michigan State Medical Society; aged 61; died, May 12.

William Walter Glenn ⊕ Hillsboro, Ohio; Starling Medical College, Columbus, 1879; aged 69; died, May 5, of peritonitis, following an appendectomy.

⊕ Indicates "Fellow" of the American Medical Association.

William Le Grand Suggett, Flora, Ill.; St. Louis College of Physicians and Surgeons, St. Louis, 1884; aged 71; died, April 28, of cerebral hemorrhage.

William H. Wilson, Lenoir, N. C.; Louisville Medical College, Louisville, Ky., 1885; aged 60; died, April 15, at Morgantown, of cerebral hemorrhage.

M. Hubbard Ferguson ⊕ Biddeford, Me.; Dartmouth Medical School, Hanover, N. H., 1880; aged 68; was killed in an automobile accident, in May.

Joseph Benjamin Blouin, St. Francois Montmagny, Que., Canada; Laval University Faculty of Medicine, Quebec, 1872; aged 77; died in March.

Marshall Ney Smith, St. Louis; Bennett College of Eclectic Medicine and Surgery, Chicago, 1881; aged 63; died, May 14, of cerebral hemorrhage.

George W. Graham, Charlotte, N. C.; New York University Medical College, New York, 1870; aged 75; died, May 9, of cerebral hemorrhage.

Silas W. Arrowood, Atlanta, Ga.; Georgia College of Electic Medicine and Surgery, Atlanta, 1888; aged 64; died, April 22, at a local sanatorium.

William L. B. McKelvy, Drumright, Okla.; Memphis Hospital Medical College, Memphis, Tenn., 1889; aged 61; died, May 11, of pneumonia.

Edgar D. Kerr ⊕ Westervelt, Ill.; College of Physicians and Surgeons, Chicago, 1894; aged 57; died suddenly, May 10, of heart disease.

William D. Alford, Murfreesboro, Ark.; American Medical College, St. Louis, 1878; aged 87; died suddenly, May 12, of heart disease.

John Storer Chiles, St. Louis; St. Louis University School of Medicine, St. Louis, 1907; aged 46; died, March 6, of heart disease.

Edward Yarnall Rich ⊕ Hershey, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1901; aged 45; died, May 6.

Charles R. Snell ⊕ Tecumseh, Neb.; John A. Creighton Medical College, Omaha, 1907; aged 49; died, May 7, of pneumonia.

Laura M. Fairchild Plantz, Columbus, Ohio; Penn Medical University, Philadelphia, 1860; aged 94; died, May 24, of senility.

Charles S. Cope, Tacoma, Wash.; Cincinnati College of Medicine and Surgery, Cincinnati, 1875; aged 73; died, April 23.

Thaddeus H. Woodward, Lincoln, Neb.; University of Tennessee College of Medicine, Memphis, 1883; aged 76; died, May 10.

William Kirnan Van Kirk, McKeesport, Pa.; Jefferson Medical College of Philadelphia, 1873; aged 74; died, May 9.

George Langtry Crockett, Rockland, Me.; Boston University School of Medicine, Boston, 1893; aged 53; died, May 20.

Alfred Schirmer, Chicago; University of Erlangen, Germany, 1876; aged 71; died, May 21, of cerebral hemorrhage.

Alvin Francis Story, Natick, Mass.; Boston University School of Medicine, Boston, 1882; aged 61; died, May 4.

Axel Kristmus Olsen ⊕ Ettrick, Wis.; Rush Medical College, Chicago, 1897; aged 57; died, April 8, of influenza.

J. C. Wood, Bardstown, Ky.; Kentucky School of Medicine, Louisville, 1866; aged 88; died, March 6, of senility.

Fred A. Shute, Boulder, Colo.; Texas Medical College and Hospital, Galveston, 1869; aged 79; died, April 20.

R. S. Byers, Trafalgar, Ind.; Medical College of Indiana, Indianapolis, 1880; aged 71; died, April 6.

James Duffield Toy, De Ridder, La.; Rush Medical College, Chicago, 1905; aged 46; died, May 2.

Israel W. Cunkle, Madison, Kan.; Rush Medical College, Chicago, 1869; aged 75; died, April 17.

Elias Wells Kellogg ⊕ Milwaukee; Rush Medical College, Chicago, 1889; aged 64; died, May 20.

Edward J. Hoag, Ridott, Ill.; Rush Medical College, Chicago, 1884; aged 63; died, May 3.

Washington L. Lee, Petal, Miss. (licensed, Mississippi, 1882); aged 71; died, May 6.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

PROGRESS AND CONSERVATISM IN THERAPEUTICS

A Report of the Committee on Therapeutics of the Council on Pharmacy and Chemistry

The Committee on Therapeutics of the Council on Pharmacy and Chemistry of the American Medical Association prepared the communication which appears below for the purpose of calling to the attention of physicians two books, published by the Council, which are of great value to all who are actively engaged in the practice of medicine.

W. A. PUCKNER, Secretary.

We, the undersigned, constituting the Committee on Therapeutics of the Council on Pharmacy and Chemistry of the American Medical Association desire to call to the attention of physicians the two books "New and Nonofficial Remedies" and "Useful Drugs." For eighteen years the Council has done its utmost to bring before the medical profession the truth concerning the new proprietary medicinal preparations which are being offered to the profession.

In addition to its permanent secretary and the editor of THE JOURNAL of the American Medical Association, the Council consists of a group of clinicians, pharmacologists and chemists appointed by the Board of Trustees of the American Medical Association, because of their individual fitness to investigate the problems of drug therapy. The purpose of the Council is to disseminate the truth in matters pertaining to the use of drugs and thereby improve drug therapy. In this connection it has been operating a chemical laboratory in charge of the permanent secretary and manned by a personnel especially trained in the field of drug analysis. In addition, through its committee on therapeutic research, it has fostered and financed many investigations in the fields of pharmacology and therapy.

While, as stated above, the Council was organized primarily to put a stop to the exploitation of proprietary medicines under false claims and to the use of secret preparations, its activities have broadened until its work may now be characacterized as "a propaganda for the rational use of drugs." Evidence of this broader policy is seen in the publication of these two books.

NEW AND NONOFFICIAL REMEDIES

In New and Nonofficial Remedies are listed and described such new preparations as, in the opinion of the Council, give promise of being of more or less value in the practice of medicine and are ethically presented to the medical profession. While many of the preparations described in the book are on trial, and no doubt will ultimately be discontinued or replaced by better products, a considerable proportion of the preparations are of unquestionable value and in the course of time will be found to be permanent and necessary acquisitions to our therapeutic resources.

The acceptance of a preparation for New and Nonofficial Remedies is governed by a set of rules formulated by the Council. The rules require in effect that the quantitative composition of the product be declared; that no undue or grossly exaggerated therapeutic claim be made for it; that the method of exploitation shall not be contrary to the best interests of the public and the medical profession, and that it should possess or give promise of having therapeutic value. Acceptance by the Council carries with it admission to the advertising columns of the Association's Journals, while rejection debars the product from such privileges.

New and Nonofficial Remedies constitutes a ready reference book in which can be found the description of new preparations of an ethical character, their composition, indications and uses and the dosage to be employed. Opinions of the

Council also appear, expressed in the discussion of the various classes of remedies. This opinion should be worthy of consideration since it is based on a thorough study of the drug in question and is expressed with frankness. In cases in which physicians should be put more than usually on guard in the use of a given new article reference is made to any question that impresses itself on the Council in connection with the history or probable outlook for any preparation.

The Council is so constituted that cooperation enables it to investigate the literature as no individual could possibly do. The secretary with the cooperation of the editorial staff of THE JOURNAL assists the individual members by securing the necessary literature, and by references to reports which have been made on proprietary articles in the past. This is important, for these proprietary preparations go through stages of development, and thus a clear estimate of the value of drugs may be found in the book. The book is revised yearly. Those products which fail to live up to expectation or to the claims of the proprietors are omitted, while new ethical preparations meeting the requirements of the Council are added. Therefore the book represents the current opinion of the Council. It is the ambition of the Council that New and Nonofficial Remedies shall become the accepted guide for physicians in the recognition of new remedies.

USEFUL DRUGS

In order to improve the instruction in medical schools in pharmacology and materia medica and to aid the practicing physician in the choice of remedial agents, the Council has selected a list of drugs which is the basis of the book "Useful Drugs," which is now the guide for the selection of drugs for instruction in many medical schools. Many state licensing boards confine their questions in pharmacology, materia medica and therapeutics to the drugs therein listed.

This book, also, undergoes frequent revision, taking into account the recent important advances in pharmacology and therapeutics. The needs of the practicing physician are kept in mind and the book should prove of special value both in the practice of medicine and in the teaching of pharmacology and therapeutics.

"Useful Drugs" and "New and Nonofficial Remedies"[1] together furnish information concerning all drugs, old and new, which are at present essential to, or give promise of value in, the practice of medicine. They have been compiled with a special object in view, namely, to meet the needs of the student and practitioner of today.

Respectfully submitted,

C. W. EDMUNDS, M.D.,
Professor of Materia Medica and Therapeutics, University of Michigan, Ann Arbor.

JOHN HOWLAND, M.D.,
Professor of Pediatrics, Johns Hopkins University, Department of Medicine, Baltimore, Md.

ERNEST E. IRONS, M.D., PH.D.,
Associate Professor of Medicine, Rush Medical College, Chicago.

W. T. LONGCOPE, A.B., M.D.,
Professor of Medicine, Johns Hopkins University, Department of Medicine, Baltimore, Md.

G. W. MCCOY, M.D.
Director Hygienic Laboratory, U. S. Public Health Service, Washington, D. C.

W. W. PALMER, B.S., M.D.
Bard Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York.

FRANCIS W. PEABODY, M.D.
Professor of Medicine, Medical School of Harvard University, Boston, Mass.

L. G. ROWNTREE, M.D., SC.D.,
Professor of Medicine, Mayo Foundation, Rochester.

1. "Useful Drugs" sells for 60 cents; "New and Nonofficial Remedies" for $1.50. The two books may be had for $2.00 from the American Medical Association, 535 North Dearborn Street, Chicago.

Value of Reflex Signs in the Neurotic.—In neurotic individuals, and especially in the postoperative neurasthenic, little or no reliance can be placed on the reflex signs. Here, as always in medicine an estimation of the general physical and mental "make-up" of the patient is essential before the utility of symptoms and indirect signs can be assessed, and the psychologic effects of long continued pain or ill health must always be taken into account. Universal hyperesthesia and rigidity are commonly present in these unfortunates, though the rigidity is usually of that intermittent type which can be differentiated readily from the true reflex hypertonus of peritoneal or visceral inflammation.—J. A. Ryle, *Clin. J.* **52**:142 (March 21) 1923.

Correspondence

CHAULMOOGRA OIL IN LEPROSY

To the Editor:—So much has been written of the results of the ethyl esters of chaulmoogra oil that I feel that I should report on our experience with the oil itself. We used our first chaulmoogra oil here about fourteen years ago by mouth, but about 1911 we began to use it by intramuscular injections, and have continued to do so since. Several preparations and combinations were used until finally we used the oil with 1 per cent. camphor intramuscularly.

This month (July, 1922) we are discharging ten cases as arrested or probable cures with instructions that the patients return every six months for examination. From all appearance and as far as we can tell they are cured, though time only will tell us whether they are permanently cured.

The method of administration is as follows: Every Saturday afternoon each leper in the Kwangju Leper Home gets an injection of from 3 to 8 c.c. of hot chaulmoogra oil with 1 per cent. camphor. We start on 3 c.c., and in three months reach to from 5 to 8 c.c., according to the size and strength of the patient, or giving them about all they can well bear, the patient himself being the judge. The injection is made into the buttocks and not very deep. We found that occasionally a deep injection becomes infected, and a deep abscess is far worse than a shallow one. Since the lepers have learned to be more careful, we rarely ever get an abscess these days, though in their early days of doing this work they were not so careful and had some trouble. There is no excuse for an abscess.

The oil is heated on a water bath; then enough camphor is added to make 1 per cent. camphor. The camphor should first be macerated, and then added. In cold weather this solidifies, and must be heated and melted before injecting. Just after the injection, the lepers must bathe, and then they are to rest until Monday morning. Usually Monday they are ready to take up their various duties again and suffer no inconvenience. No other treatment is given except as some other condition requires.

The response to treatment is more prompt in the young and in early cases; and, vice versa, elderly persons and very advanced cases are much slower to respond. A boy came with bloated face, maculae, tubercles, and swollen hands and feet, presenting in all a most distressing appearance. In four months under treatment he looked like another person.

We now have seventy-five patients on the ethyl ester with 2 per cent. iodin as a trial, and as this began only six months ago I am not yet able to report results. However, this is the preparation that has given such marked results in Hawaii and made it possible to discharge more than 100 patients on parole.

Some cases that we get are quite advanced; and while these patients improve and have generally good health, they do not seem to be able to throw off the condition entirely as do others. About two thirds of our 500 patients are able soon to take an active part in the daily work about the institution, and this regular work is a great thing in bringing about a cure. To sit and be idle is not good in most diseases, and less good in leprosy. Every leper is given a small patch of garden and required to prepare some of his vegetables. Even though a limb has been lost, he can hobble out and scratch in the dirt, and this is very beneficial.

We find that after a leper has been on treatment a year or so, he can then take the oil in capsules three times a day with very good results. Our men such as masons, brick makers and those doing harder labor, prefer this. I believe that by giving large doses of the chaulmoogra oil we can

get as good results as that with the ethyl esters, though my tests have not been in progress long enough to make a comparison. I am quite sure of this, though, that when we inject 8 c.c. of the plain chaulmoogra oil we get into the body the equivalent of the ethyl esters and every other product there is in the drug. In the making of the esters there is quite a loss, about four fifths being lost; and in this portion there are very likely other things that are of benefit to the leper.

Our experiment for the coming year will be to keep a close record and compare the results of the seventy-five on the ester and the rest of the colony on the other preparation—the oil and camphor.

R. M. WILSON, M.D., Kwangju, Korea.

"MEDICAL EDUCATION; PAST AND PRESENT"

To the Editor:—While agreeing with most of the views expressed by Dr. Witherspoon (THE JOURNAL, April 28, p. 1191), I think some comment should be made in regard to his third objection to the employment of full-time teachers:

> There is no place in the actual practice of medicine for sustained medical research. It is condemned by law, and, according to all moral standards, is a reprehensible practice. No man employs a physician to advance science at his expense and risk. No man would knowingly tolerate it. If a student is taught to do research work on his patients in the university hospital and is complimented on something great or small in connection with it, he might become convinced that that was a proper or permissible course—convinced, in a word, that the patient is only a sort of advanced laboratory animal. Could he then reasonably be expected to disgorge his mind of all these impressions and become an honest servant of his patrons on graduation? Would he not feel justified in trying out his new ideas on them?

I doubt whether Dr. Witherspoon meant it quite so strongly as that, especially as he goes on to argue that, to be a good teacher of medicine, a man must learn something from years of private practice which he cannot get from books. Unfortunately, as the statement stands, it sounds like a severe indictment of the medical profession; and it must come as a shock and a discouragement to those who are doing valuable research work in the clinic and in the office.

We will all agree that no one should experiment on any human being without his consent or to his detriment; and I do not believe that there are many men in the profession so callous, or so unmindful of the legal consequences, as to do such a thing. We can, however, think of many types of research work which a thoughtful practitioner can do in the clinic, the hospital or the office without causing the slightest inconvenience or injustice to his patients.

It is really unfortunate that so many men leave college with the idea that medical research can be done only in laboratories with microscopes, test tubes and guinea-pigs. That is not true. Every man who has been born with a curiosity about things, and who will carry it with him into old age, past all those explanations that do not really explain; every man who will study disease as it appears in his patients and not only in his books; every man who will keep records of histories, findings and the after-results of treatment, and who will later analyze those data critically and open-mindedly, can do research of incalculable value to humanity. As classical examples of such work I may mention that of Sir James Mackenzie in the field of heart disease, or that of Beaumont on the physiology of the stomach. Peering into the future, I venture to say that as we recover somewhat from our present preoccupation over bacteria and their effects, we shall begin to study also the individual and familial peculiarities of the soil in which they grow. We shall learn more about the diseases that are due to the contractor's having put in poor materials; we shall study the course of the disease in individuals from childhood till death, and shall compare the manifestations of a "diathesis" in different members of the same family. Such work will be done best by the family physician in small communities where people do not scatter. Other physicians will greatly advance our knowledge by the use of modern statistical methods; others will be trying out new drugs, such as insulin and the new modifications of arsphenamin. But why elaborate? I think my point is made.

WALTER C. ALVAREZ, M.D., San Francisco.

SUCCESSFUL RESULTS OF INTRACARDIAC EPINEPHRIN INJECTION

To the Editor: — At a confinement in the Sacred Heart Hospital to which I was called in consultation by Dr. J. M. Casey, May 13, I delivered the patient of twins. The first infant fared normally, but the other did not breathe, and after ten minutes of futile effort on our part, was believed dead by a sister, who baptized it. Thereupon I injected 2 minims of 1/1000 epinephrin solution into the heart. Within fifteen seconds the infant began to breathe, and in five minutes was lying beside its brother, both twins crying lustily. When I saw them next day, they were in perfect condition.

D. L. NEWTON, M.D., Fort Madison, Iowa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF IVY POISONING WITH RHUS TOXICODENDRON AND RHUS VENENATA

To the Editor:—What is the accepted teaching about the use of the tincture of rhus toxicodendron or rhus venenata in the treatment of ivy poisoning? What is the dosage? Where can these drugs be obtained? H. M.

ANSWER.—Schamberg reported in THE JOURNAL (Oct. 18, 1919, p. 1213) that the administration internally of tincture of rhus toxicodendron in small but increasing doses will confer temporary immunity to the poison of poison ivy, and that such doses are useful in the treatment of rhus dermatitis. His paper was discussed in THE JOURNAL, Nov. 1, 1919, p. 1382. The tincture of rhus toxicodendron may be obtained from homeopathic pharmacies, such as that of Boericke and Tafel of Philadelphia, and from manufacturers of eclectic pharmaceuticals, such as Lloyd Brothers of Cincinnati. The dosage should begin with a few minims and gradually be increased to 60 minims (3.75 c.c.) a day. The treatment is discussed by Strickler in THE JOURNAL, this issue, p. 1588.

SPINAL PUNCTURE TECHNIC

To the Editor:—It is said that spinal puncture should never be done with the patient in a sitting posture. Under Queries and Minor Notes, will you kindly tell why not? Please omit name.

———, M.D., Calif.

ANSWER.—The principal reason for the recommendation against making a lumbar puncture with the patient in a sitting position is the increased danger of sudden movements of the patient, that may result in breaking the needle. When the patient lies on the side, he is more readily controlled by assistants and has not the same leverage for straightening his back that he has when seated. Fainting or dizziness will have little effect on the person lying on his side, but will cause swaying and possible alteration in the curve of the back if he is seated.

DOSAGE OF SEROBACTERIN

To the Editor:—Should a fourth dose of serobacterin be given if, in administering the three dose prophylactic typhoid treatment, the second dose is partially lost because of back leakage in the syringe, the resultant reaction from the second dose being no greater than the first, if as great, or will immunity be fairly probable as it is? Treatment is given not against present but possible future exposure.

ELLA MARX, M.D., Toledo, Ohio.

ANSWER.—It is quite probable that immunity would be produced by the three doses, even if a part of the second dose was lost.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 10. Chrm., Dr. Samuel W. Welch, Montgomery.

ARIZONA: Phoenix, July 3. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

CALIFORNIA: San Francisco, July 9-12. Sec., Dr. Charles B. Pinkham, 908 Forum Bldg., Sacramento.

COLORADO: Denver, July 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: New Haven, July 10. Sec. Eclectic Board, Dr. James E. Hair, 730 State St., Bridgeport. Sec. Homeo. Board, Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

CONNECTICUT: Hartford, July 10-11. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford.

DELAWARE: Wilmington, June 19-21. Sec., Dr. P. S. Downs, Dover.

DISTRICT OF COLUMBIA: Washington, July 10-12. Sec., Dr. Edgar P. Copeland, 104 Stoneleigh Court, Washington.

FLORIDA: Daytona Beach, June 11-12. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, June 6-8. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 18. Supt., Mr. V. C. Michels, Springfield.

INDIANA: Indianapolis, July 10. Sec., Dr. Wm. T. Gott, Crawfordsville.

KANSAS: Kansas City, June 19. Sec., Dr. Albert S. Ross, Sabetha.

KENTUCKY: Louisville, June 12. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.

LOUISIANA: New Orleans, June 7-9. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MAINE: Augusta, July 10-11. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MARYLAND: Baltimore, June 19-22. Sec., Dr. J. McP. Scott, 141 W. Washington St., Hagerstown.

MARYLAND: Baltimore, June 12-13. Sec. Homeo. Bd., Dr. E. H. Wilsey, Chesapeake City.

MICHIGAN: Ann Arbor, June 12. Sec., Dr. Beverly D. Harison, 601 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, June 5-7. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 13-14. Sec., Dr. W. S. Leathers, University.

MISSOURI: St. Louis, June 6-8. Sec., Dr. Cortez F. Enloe, Jefferson City.

NEBRASKA: Lincoln, June 6-8. Sec., Mr. H. H. Antles, State House, Lincoln.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, June 18. Sec., Dr. R. E. McBride, Las Cruces.

NORTH CAROLINA: Raleigh, June 25-29. Sec., Dr. Kemp P. B. Bonner, Raleigh.

NORTH DAKOTA: Grand Forks, July 3-6. Sec., Dr. G. M. Williamson, 860 Belmont Ave., Grand Forks.

OHIO: Columbus, June 5-8. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

OKLAHOMA: Oklahoma City, July 10-11. Sec., Dr. J. M. Byrum, Shawnee.

OREGON: Portland, July 3. Sec., Dr. Urling C. Coe, Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 10-14. Preliminary Examiner, Mr. C. D. Koch, 422 Perry Bldg., Philadelphia.

RHODE ISLAND: Providence, July 5-6. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH CAROLINA: Columbia, June 26. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TENNESSEE: Memphis, Nashville and Knoxville, June 15-16. Sec., Dr. Alfred B. DeLoach, 1230 Exchange Bldg., Memphis.

TEXAS: Austin, June 19-21. Sec., Dr. T. J. Crowe, Dallas County Bank Bldg.

UTAH: Salt Lake City, July 5. Dir. of Regis., Mr. J. T. Hammond, State Capitol, Salt Lake City.

VERMONT: Burlington, June 20-22. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 19-22. Sec., Dr. J. W. Preston, 720 Anchor Bldg., Roanoke.

WASHINGTON: Seattle, June 19. Sec., Mr. Wm. Melville, Olympia.

WEST VIRGINIA: Martinsburg, July 10. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: Milwaukee, June 26-28. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Ohio January Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports that 16 candidates were licensed by reciprocity at the meeting held at Columbus, Jan. 2, 1923. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1921)	Illinois
Rush Medical College		(1918)	Illinois
University of Illinois		(1918)	Illinois
Hospital College of Medicine, Louisville		(1897)	Kentucky
College of Physicians and Surgeons, Baltimore (1906) Pennsylvania		(1899)	Maryland
University of Minnesota Medical School		(1916)	Minnesota
Meharry Medical College (1917) Mississippi, (1921) Louisiana		(1894)	Missouri
St. Louis University		(1911)	Illinois
Eclectic Medical Institute, Cincinnati		(1895)	Minnesota
Jefferson Medical College of Philadelphia		(1902)	Penna.
Temple University		(1917)	W. Virginia
University of Pennsylvania		(1916)	Minnesota
Medical College of Virginia		(1908)	Virginia

Oklahoma January Examination

Dr. James M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports the written examination held at Oklahoma City, Jan. 9-10, 1923. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Two candidates were examined, both of whom passed. Eight candidates were licensed by reciprocity, 1 candidate was granted a reregistration license, and 3 received duplicate licenses. The following colleges were represented:

College	PASSED	Year Grad.	Number Licensed
Barnes Medical College		(1900)	1
University of Nashville		(1907)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College		(1912)	Texas
Atlanta College of Physicians and Surgeons		(1910)	Georgia
Eclectic Medical University of Kansas		(1908)	Kansas
Tulane University		(1915)	Louisiana
George Washington University		(1908)	Sask'wan
John A. Creighton Medical College		(1911)	Washington
Memphis Hospital Medical College		(1883), (1912)	Arkansas

New Mexico January Report

Dr. R. E. McBride, secretary, New Mexico State Board of Medical Examiners, reports that 9 candidates were licensed on diploma and 1 candidate received a license by reciprocity at the meeting held at Santa Fe, Jan. 8-9, 1923. The following colleges were represented:

College	LICENSED ON DIPLOMA	Year Grad.	Number Licensed
College of Medical Evangelists		(1920)	1
Georgetown University		(1903)	1
George Washington University		(1920)	1
University of Georgia		(1919)	1
Tufts College Medical School		(1918)	1
John A. Creighton Medical College		(1917)	1
Jefferson Medical College of Philadelphia		(1899)	1
Starling Medical College		(1890)	1
University of Vermont		(1897)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville		(1893)	Oklahoma

Michigan Reciprocity Report

Dr. Beverly D. Harison, secretary, Michigan State Board of Registration in Medicine, reports that fourteen candidates were licensed by reciprocity from Jan. 2 to March 5, 1923. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery		(1912)	Illinois
Northwestern University		(1920),	(1921) Illinois
University of Illinois		(1915)	Illinois
University of Louisville		(1905)	Vermont, (1911) Kentucky
Johns Hopkins University		(1901)	Missouri, (1911) Maryland
Columbia University		(1916)	Wisconsin
Long Island College of Medicine		(1906)	New York
Ohio State University College of Medicine		(1915)	Ohio
University of Nashville		(1899)	Tennessee
Medical College of Virginia		(1921)	Virginia
Marquette University		(1922)	Wisconsin

Iowa January Report

Dr. Rodney P. Fagen, secretary, Iowa State Board of Medical Examiners, reports that 11 candidates were licensed by reciprocity at the meeting held at Des Moines, Jan. 18, 1923. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College (1922, 2) Illinois		(1902)	Wisconsin, (1919) Minnesota
University of Minnesota Medical School		(1922)	Minnesota
St. Louis University School of Medicine (1921) Illinois		(1916)	Missouri
John A. Creighton Medical College		(1921)	Nebraska
University of Nebraska College of Medicine		(1922)	Nebraska
University of Buffalo		(1889)	California
Vanderbilt University		(1914)	Tennessee

Book Notices

HISTORY OF THE PSYCHOPATHIC HOSPITAL, BOSTON, MASSACHUSETTS. By L. Vernon Briggs, M.D., and Collaborators. Cloth. Price, $3. Pp. 222, with illustrations. Boston: Old Corner Book Store, 1922.

The history of the Boston Psychopathic Hospital is of the greatest interest, as it marks almost a new departure in American psychiatry. This book by Dr. Briggs, to whose energy and persistence the final successful accomplishment was largely due, is therefore well worth reading; but it is unfortunate that Dr. Briggs has allowed personal feelings to enter so largely into the story, especially in regard to the conflict between himself and the state board of insanity, which appears to have been largely over methods of procedure. The first part of the book gives an outline of the history of the care of the insane in Massachusetts; and in the second part is an account of the organization for administration and of the work that has been accomplished during the first ten years of the existence of the hospital, written by past or present officers of the institution. It is a record well worth while and a fitting tribute to Dr. E. E. Southard, the first director, to whose memory the book is dedicated. The difficulties that were encountered and the solutions found will prove of the greatest value to other states in planning similar ventures, and the accomplishments should go far to demonstrate the vital importance of psychopathic hospitals to a community in meeting one of its greatest problems.

BRAIN ABSCESS: ITS SURGICAL PATHOLOGY AND OPERATIVE TECHNIC. Wells P. Eagleton, M.D. Cloth. Price, $7.00. Pp. 297, with 40 illustrations. New York: The Macmillan Company, 1922.

"If all were frankly to record their thoughts and experiences, even of one day, humanity would be advanced centuries." With the memory of this teaching of his father, Dr. Eagleton has here set forth a considerable experience in operating on conditions within the skull, the results of original experiments on animals, and careful postmortem observations of cases in which death resulted from intracranial lesions. The author is a firm advocate of the technic in operating for intracranial suppuration elaborated by Professor Harvey Cushing. The greatest emphasis is laid on the pathologic and mechanical changes brought about by the conditions discussed.

As has been said, the work is a record of fifty cases of adjacent brain abscess which have been treated by Dr. Eagleton. Many of the case reports have appeared in periodical literature but are here assembled as a unit, and additional material and new cases have been added.

The work begins with a philosophical consideration of the attitude of the surgeon who is to undertake this type of surgery, "a peculiar mental attitude which will render him sensitive and attentive to the minute details of diagnosis and surgical procedure." The importance of adequate history taking and some elementary points in general technic are carefully stressed. Classification is made from the point of view of the pathologist and of the surgeon. In each instance significant points are emphasized by the citation of illustrative cases.

The author next considers brain abscess in relation to the part of the brain concerned: middle fossa, metastatic abscess, cerebellar abscess, frontal lobe abscess, etc. The importance of detailed consideration is obvious from a careful study of any one of these sections. As is well known, these cases are not frequent in the practice of the average surgeon. As Dr. Eagleton shows, the route of infection, the attempts of the tissues to resist the pathologic changes and the amount of tissue involved are important as guiding the operative procedure. In fact, a special chapter is devoted to the protective mechanism by which the brain resists infection. Several chapters follow in which detailed consideration is given to the diagnosis of brain lesions, and to complications and results after proper operative procedure. In several appendixes are a guide for detailed neurologic examination and an exhaustive record of the literature of the subject. Complete indexes to authors and subjects round out the book.

In considering Dr. Eagleton's special treatment of the subject, the method of dealing with intracerebral abscesses without surface evidence of the infection may be emphasized; the prime object here is to avoid traumatism to the brain and the spread of infection to the meninges. The recommendation to establish a track through which it is safe to eradicate the abscess, comparable to that which nature establishes as a means of evacuating such an abscess, is well worthy of thought and consideration. Practical difficulties in actual experience are also frankly recorded and the lessons to be learned therefrom discussed. The book is well illustrated and the author has been at great pains to avail himself of the experience of others and to credit them properly for it. Among some minor errors which may be corrected in future editions is the inclusion of the Babinski reflex and the Kernig sign under the head of deep reflexes, and some slight variation in the relation of circulation and blood supply to the brain to the formation of abscess. Surgeons who may be called on in emergency to meet the exceedingly difficult problems associated with lesions of the brain will find in this book an excellent collection of past work and the records of an extensive first hand experience.

PRÉCIS DE PARASITOLOGIE. Par E. Brumpt, Professeur a la Faculté de Médecine de Paris. Third edition. Cloth. Price, 50 francs. Pp. 1,215, with 741 illustrations. Paris: Masson et Cie, 1922.

The appearance of a third edition of this well-known work will be greeted with approval by those who are familiar with the value of the Collection de Précis Médicaux of which it forms a number, and especially by such as have known and used the earlier editions of the work. In one sense, the book hardly deserves to be called a compendium, for it covers more than 1,200 pages, and with its numerous illustrations presents one of the best surveys of the field of parasitology available. A review of the text shows significant additions to the older editions consonant with the progress made in parasitology since 1913. The most striking are naturally among the protozoa, in which the spirochetes, the hemogregarines and Leishmania have been given special consideration in the light of important recent researches. The work on these items is generally up to date, so that one is surprised to find the interesting form from a nasal polyp, generally known as *Rhinosporidium*, still retained among the protozoa in the order designated *Haplosporidia*. Several recent studies on this group seem to show, beyond question, its relationship to the lower plants and its lack of affinities with the protozoa. It would be wrong, even in a brief review, to leave a possible impression that the only elaboration of the older edition was to be found within the protozoa. While the most far reaching changes were made in that group because of the remarkable discoveries of recent years, yet a considerable number of new trematodes have been added to the list of human parasites, and are each of them duly considered in their appropriate place. In the cestodes, the development of the fish tapeworm, and, among the nematodes, the life history of the ascarids and of the trichocephalids is presented in accordance with important recent investigations. Among the arthropods, the agency of the blood-sucking ticks and insects in previously unsuspected relations as transmitters of disease has been given adequate attention. Finally, it is perhaps worthy of note that this work embraces not only the animal parasites but also, with the exception of the bacteria, the plant parasites and the diseases that they produce. In the section devoted to these organisms, the author has given a better review of the group than is readily available anywhere else. On the whole, the work may be highly commended for its clarity of presentation, so characteristic of French literature, and especially for the admirable illustrations. They are numerous, and more than 300 of them absolutely new. One rejoices at the omission of some time-honored and inadequate sketches that have graced the pages of so many manuals. The original illustrations are so good that one wishes the author could be persuaded in later reprints to go even farther in the direction of replacing sketchy and distinctly misleading illustrations that are all too general in this field. The publishers are to be congratulated on the printing and the paper, which has permitted them to present a volume of this size in a form that is both convenient and attractive.

Medicolegal

Use of Name Other Than Own—Board and Agent

(Berry v. Alderson et al., Board of Medical Examiners (Calif.), 211 Pac. R. 836)

The District Court of Appeal of California, First District, Division 1, in affirming a judgment that affirmed the action of the board of medical examiners in revoking petitioner Berry's license to practice medicine, says that he was charged with having violated the provision of the medical practice act which authorizes the revocation of a license for unprofessional conduct when the holder of the license uses in any sign or advertisement in connection with his practice any fictitious name, or any name other than his own. There was evidence that on a certain date a representative of a medicine company and the petitioner gave a free open-air show, part of which was a lecture by the petitioner on some medical subject; that on the platform there was a large sign which read "K. B. Bloodless Surgeons"; and that the performers distributed cards on which was printed: "This card entitles the holder to one free consultation and examination by the physicians and surgeons of the K. B. Medicine Co. Not good after ———. Corner P and Merced streets." The location indicated was the place of residence of the representative of the company and the petitioner, the latter occupying one of the rooms as an office or consultation room. On this building was also exhibited the sign "K. B. Bloodless Surgeons," but on the window and the door of the petitioner's consultation room appeared only his name. The profit, if any, to be derived by the petitioner from this enterprise was to come from fees received for medical treatment given by him to persons coming to his office, although, as stated on the cards distributed, the first consultation was gratuitous. The court thinks that the evidence showed that the petitioner did use in connection with his practice, in an advertisement thereof, the designation or name "K. B. Bloodless Surgeons," a name other than his own, bringing him within the provisions of the medical practice act relating to unprofessional conduct.

It was contended that the use by a physician of a name other than his own referred to in the statute must be of such a nature and under such circumstances as to amount to a fraud on the public—must be a fraudulent concealment of identity; otherwise this provision of the law is too vague to be given any effect. But this construction the court thinks is entirely too narrow. This provision is aimed at conduct much less reprehensible than fraudulent misrepresentation. The view of the court is that the legislature intended that a person to whom the privilege has been granted of practicing medicine and representing himself to the world as qualified and worthy of the confidence of the sick should, when offering his services by advertisement or announcement, do so under his own name. This simple requirement, so easily complied with, was not aimed particularly at the person who is willing to incur the odium of actual fraud, but was designed to offer a much wider protection to the public by assuring to it a reasonable certainty of knowing in every case precisely with whom it is dealing. The importance of the relation of physician and patient, and the very serious consequences which may follow unskilful or negligent treatment, render such openness and candor particularly desirable. That the provision of the law in question is neither vague nor indefinite is obvious.

Another contention was that because the charge against the petitioner was filed by a special agent appointed by the board, who also appeared as a witness, the board was at once prosecutor and judge; that the hearing was therefore a mere formality, and the result a foregone conclusion, in violation of the provision of the federal constitution requiring due process of law. But the court does not think that provision was violated by reason of the proceeding for the revocation of the petitioner's license having been initiated by an agent of the board. No direct or immediate interest on the part of the board could be predicated on such fact, nor could any fair inference be drawn from it that the board in its hearing of the charges was biased against the accused thereby. The medical practice act provides for the appointment of such agent, and it was in the discharge of his duties that he filed the charges. Under these circumstances, the petitioner's contention appears to have little weight.

Hearing denied by the Supreme Court of California.

Two Decisions Regarding Operations for Hernia

(Houston Electric Company v. Schmidt (Texas), 244 S. W. R. 1110. Sun Coal Company v. Wilson (Tenn.), 245 S. W. R. 547)

The Court of Civil Appeals of Texas, in affirming a judgment in favor of Mary Schmidt for $10,000 damages for a double inguinal hernia and spinal trouble that were caused by a collision of one of the defendant electric company's cars with an automobile in which she was riding, says that she was 4 years old at the time of the accident, which accident was attributed to the defendant's negligence. The defendant contended that she should have submitted to an operation for the hernia; but the court does not think that the defendant's position was well taken. The rule is well settled that a person injured is required to exercise reasonable prudence to keep down the damage caused by the acts of the wrongdoer, but no person is required to risk his life on the operating table for any such purpose. Furthermore, as a matter of law, one who has been injured by the negligence of another is not bound to undergo a serious and critical operation which would necessarily be attended with some risk of failure and of death, but must be permitted to exercise the liberty of choice in the matter, and his refusal to submit to the operation, although under the evidence it would probably lessen the effects of the injury, cannot be considered in mitigation of the damages recovered therefor. The test is: Would a person of ordinary prudence, under all the circumstances, have done so, and this is a question for the jury. The plaintiff in this case was suffering from a double inguinal hernia. Several physicians testified that an operation for such a hernia is a major operation, and dangerous, involving the risk of life. A physician who was a witness for the defendant said that a normal man would shrink from such an operation. The question was submitted to the jury whether, under all the circumstances, an ordinarily prudent person would have submitted to an operation, and the jury answered, "No." The court thinks that the evidence supported this finding.

The Supreme Court of Tennessee, on the other hand, reduces a decree which allowed claimant Wilson $4.73 a week for 300 weeks on account of his having, while in the employ of the Sun Coal Company, received an injury which produced hernia, the reduction being to $4.73 a week for thirteen weeks, or the period from the date of his injury to the time he refused to be operated on. The court says that the evidence showed that a person so injured can never do efficient work; that the injury will likely become greater as time passes; that the earning capacity of the claimant had been reduced one third; that the only cure for a hernia is a surgical operation; that it is not a serious operation attended with unusual danger or pain, and can be successfully performed under a local anesthetic; that such an operation usually restores a man to his former earning capacity; that, when performed by skilled surgeons, virtually all such operations are successful; that the claimant in this case was physically able to undergo the operation, and that an operation was recommended by the several physicians who examined him. Under these facts, the court is of the opinion that the employer was within its right in demanding that the claimant submit to the operation. Under the undisputed evidence, the court is impressed with the idea that any reasonable man, under such circumstances, would have submitted to an operation. The workmen's compensation act of Tennessee is broad, and provides that the employer shall furnish medical and surgical treatment for thirty days following the service of notice, and that he may furnish it thereafter, which the employee must receive. However, the court does not wish to be understood as holding that, under all circumstances, a claimant should submit to an operation when so requested by the employer.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, San Francisco, June 25-29. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.

American Association of Anesthetists, San Francisco, June 25-27. Dr. F. H. McMechan, Avon Lake, Ohio, Secretary.

American Ophthalmological Society, Colorado Springs, June 19-21. Dr. T. B. Holloway, 1819 Chestnut Street, Philadelphia, Secretary.

American Orthopedic Association, Rochester, N. Y., June 7-9. Dr. DeForrest P. Willard, 1630 Spruce Street, Philadelphia, Secretary.

American Proctologic Society, Los Angeles, June 22-23. Dr. Ralph W. Jackson, 245 Cherry Street, Fall River, Mass., Secretary.

American Psychiatric Association, Detroit, June 19-22. Dr. C. Floyd Haviland, Drawer 16, Capitol Station, Albany, New York, Secretary.

American Radium Society, San Francisco, June 25-26. Dr. Edwin C. Ernst, Humboldt Bldg., St. Louis, Secretary.

American Society of Clinical Pathologists, San Francisco, June 25-26. Dr. Ward Burdick, 652 Metropolitan Bldg., Denver, Secretary.

American Society of Tropical Medicine, San Francisco, June 25-26. Dr. B. H. Ransom, Bureau of Animal Industry, Washington, D. C., Sec'y.

American Therapeutic Society, San Francisco, June 22-23. Dr. Lewis H. Taylor, The Cecil, Washington, D. C., Secretary.

Arizona Medical Association, Grand Canyon, June 21-22. Dr. D. F. Harbridge, Goodrich Bldg., Phoenix, Secretary.

Association for the Study of Internal Secretions, San Francisco, June 25. Dr. F. M. Pottenger, Title Insurance Bldg., Los Angeles, Secretary.

California, Medical Society of the State of, San Francisco, June 21-23. Dr. W. E. Musgrave, Balboa Bldg., San Francisco, Secretary.

Maine Medical Association, Houlton, June 5-7. Dr. B. L. Bryant, 265 Hammond Street, Bangor, Secretary.

Massachusetts Medical Society, Pittsfield, June 12-13. Dr. W. L. Burrage, 182 Walnut Street, Brookline 46, Boston, Secretary.

Medical Women's National Association, San Francisco, June 25-26. Dr. M. J. Potter, First National Bank Bldg., San Diego, Calif., Secretary.

Montana, Medical Association of, Butte, July 11-12. Dr. E. G. Balsam, 222 Hart-Albin Bldg., Billings, Secretary.

National Tuberculosis Association, Santa Barbara, Calif., June 20-23. Dr. George M. Kober, 370 Seventh Avenue, New York, Secretary.

New Jersey, Medical Society of, Atlantic City, June 21-23. Dr. William J. Chandler, South Orange, Secretary.

New Mexico Medical Society, Albuquerque, June 19-21. Dr. J. W. Elder, Santa Fe Hospital, Albuquerque, Secretary.

Oregon State Medical Association, Portland, July 10-11. Dr. C. L. Booth, Selling Bldg., Portland, Acting Secretary.

Pacific Northwest Medical Association, Seattle, June 19-21. Dr. F. Epplen, 422 Paulsen Building, Spokane, Secretary.

Radiological Society of North America, San Francisco, June 21-22. Dr. M. J. Sandborn, Appleton, Wis., Secretary.

Rhode Island Medical Society, Providence, June 7. Dr. I. W. Leech, 369 Broad Street, Providence, Secretary.

Southern Minnesota Medical Association, Faribault, June 11. Dr. H. T. McGuigan, Redwing, Secretary.

Utah State Medical Association, Salt Lake City, June 20-22. Dr. W. L. Rich, Boston Building, Salt Lake City, Secretary.

West Virginia State Medical Association, Beckley, June 12-14. Dr. Robert A. Ashworth, Moundsville, Secretary.

Western Society for the Study of Hay Fever, Asthma and Allergic Diseases, San Francisco, June 25. Dr. A. H. Rowe, Hutchinson Bldg., Oakland, Calif., Secretary.

Wyoming State Medical Society, Laramie, June 20-21. Dr. Earl Whedon, Sheridan, Secretary.

AMERICAN SOCIETY FOR CLINICAL INVESTIGATION

Annual Meeting, held in Atlantic City, N. J., April 30, 1923

The President, DR. ELLIOTT P. JOSLIN, Boston, in the Chair

Clinical Observations on Insulin Hypoglycemia and the Carbohydrate Equivalent of Insulin in Man

DRS. WALTER R. CAMPBELL and A. A. FLETCHER, Toronto: When normal, nondiabetic and diabetic persons are placed on a nonnutrient diet and given a sufficient amount of insulin, there is a marked tendency, whatever the percentage of initial blood sugar may be, for the blood sugar to fall to a barrier level which lies in the range of normal blood sugar percentage. This is a protective mechanism. With considerable excess of insulin, the blood sugar becomes unduly depressed and gives rise to the symptom-complex of hypoglycemia. Various substances relieve this condition. In order of decreasing efficiency these are: glucose, maltose, galactose, lactose, sucrose, levulose and glycerin. Starches may also be used. Epinephrin is rapidly, but temporarily, effective. Raffinose, rhamnose and nonnutrient substances are not effective. The carbohydrate equivalent of insulin is the number of grams of carbohydrate properly metabolized per unit of insulin, and is a measure of its therapeutic efficiency. Units from different batches of insulin give approximately the same carbohydrate equivalent in the same person. In suitable cases this lies between 2 and 2.5 gm. per unit of insulin. Considerable differences in carbohydrate equivalent occur in different patients, and are associated with various disturbing factors.

The Use of Insulin in Diabetes

DRS. D. M. COWIE and J. P. PARSONS, Ann Arbor, Mich.: Clinical observations seem to show that the person with so-called mild diabetes needs insulin as much as the person with severe diabetes, and that the condition is much more easily controlled and may possibly be overcome if treatment is instituted early enough. It is too early to say that there is actual evidence that in the average case of diabetes longevity can be increased by insulin. On the other hand, results thus far obtained by insulin treatment almost compel us to expect that the length of life will be increased greatly, particularly if beginning cases are carefully watched, and if skilful treatment with insulin is instituted. It is a mistake to be content with keeping a patient sugar free on a carbohydrate intake that is insufficient to overcome his natural, normal cravings and to keep his weight below the minimal normal weight necessary to enable him to carry on his daily duties with comfort when, perhaps, even a small amount of insulin daily will accomplish this. The old methods secure certain beneficial results by keeping a man's nutritive processes at the lowest possible level by forcing on him food which, perhaps not in a direct way but in a roundabout way, must ultimately be utilized by his diseased pancreas; thus his improvement is only apparent, not real. Our observations lead us to believe that there is never a time when the diabetic process is checked by these methods or when the curve of tolerance deviates from the line that leads to fatal coma within a well known and narrow space of years. Insulin seems to offer a means of at least staying an advancing process, of the true nature of which we are still ignorant. Observations on the symptomatology developing during the stage of hypoglycemia, which we prefer to call hyperinsulemia, because it seems to us that there is more than hypoglycemia in this condition, lead us to believe that this and many other phenomena are the result of this condition about which we shall know more as investigations continue. The symptoms of hyperinsulemia seem to differ in different subjects. Some seem to react more sensitively than others. Some will consume large amounts of glucose without its "spilling over" in the urine, or without spilling for many hours, while others spill on very much smaller amounts. It seems that little danger can come from the administration of insulin to babies with diabetes, because the usual method of spacing feedings can easily be taken advantage of to insure sufficient carbohydrate coming into the blood stream at a time when hyperinsulemia might otherwise develop. In children no longer bottle fed, danger might very easily arise because of the inability of the child to announce developing symptoms. However, averting danger in such cases is only a matter of careful management and meal spacing which will insure a carbohydrate income at these times. The patient should not be allowed to pass from under control until the lowest level of insulin intake is established.

The beneficial effect of insulin on coma is marked and quite rapid. Infections, such as boils, infected eczema, impetigo, infected wounds, contagious diseases, such as chickenpox, and respiratory infections occurring in the course of diabetes, are overcome more rapidly and without apparent harmful effects by insulin. Insulin intake should be increased at these times. The evil effects of surgery and anesthesia in cases of diabetes we believe can be overcome completely by proper administration of insulin. Any evil effects that may occur should be attributed to our lack of knowledge of the proper amount to administer, which will be overcome in the course of time, as our knowledge continues to accumulate. Insulin induces complete anesthesia when the stage of marked hyperinsulemia is reached. This state can be induced in nondiabetic persons almost as readily as in diabetic patients without untoward results.

The use of insulin will enable us greatly to simplify the diet of the patient with diabetes. Enough carbohydrate can

always be ingested and utilized to supply the normal carbohydrate demand for the complete and proper metabolism of the other food principles desired by the patient, provided, of course, that this demand is not excessive. Our experience has been that patients frequently ask whether it is necessary for them to eat all of the diet prescribed. It will, therefore, only be necessary to teach the patient how to select his quota of carbohydrate foods. We have observed in a number of patients studied thus far a demand for a large amount of insulin to cover a given amount of carbohydrate in the beginning of treatment, and a gradually lessening demand for insulin as time goes on. For example, a man required in the beginning of his treatment 60 units of insulin a day to metabolize 70 gm. of carbohydrate. At present he metabolizes 85 gm. of carbohydrate on 2 units of insulin a day, 1 unit before breakfast, and 1 unit before supper. This is almost an insignificant amount: in quantity, only 0.2 c.c. We are inclined to interpret this as the reaction of an increased tolerance on the part of the patient. In a case of renal glycosuria, insulin had no effect either in lowering the already low blood sugar perceptibly or in altering the glycosuria. Therefore, no deleterious effect resulted. If insulin were pushed it would probably react the same as it does in a normal person. At first we feared that danger might come from the use of insulin in such a case. While our observation negates this fear, it supports the general feeling that no diabetic should be given routine insulin treatment before a careful study of the blood sugar content is made by a reliable method. Insulin has changed the mental attitude of patients with diabetes from one of melancholy and depression to one of cheerfulness, happiness and satisfaction. If insulin will save a man in coma from death, what may it do for a man in the early stages of diabetes? Should this not be the most important question to settle? This being the case, all diabetic patients should receive insulin treatment.

The Excretion of Organic Acids in the Urine of Patients with Diabetes

DRS. REGINALD FITZ, A. V. BOCK, M. P. STARR and HENRY FIELD, JR., Boston: Isolated cases of fatal diabetic coma have been reported in which death seemed to be caused by acidosis but without ketosis. Van Slyke and Palmer reported a case of diabetes in which, as the excretion of organic acids increased, the fraction not accounted for by the acetone bodies also increased. In a case of diabetic coma in which insulin was administered, we observed that while the concentration of acetone bodies and sugar in the blood diminished rapidly, yet acidosis, as estimated by the alkali reserve, did not diminish proportionately. These facts led us to compare the excretion of organic acids and of acetone bodies in a series of cases of diabetes, and to look for other acids than the ketones as sometimes playing a part in diabetic acidosis. In most instances the increased organic acid excretion observed was closely paralleled by the excretion of acetone bodies. In one instance, however, severe acidosis, as measured by the blood carbon dioxid, persisted in the presence of a urine that was acetone free, and this urine contained a large amount of unidentified organic acid. In most cases of diabetes, the quantitative excretion of acetone bodies in the urine can be estimated with sufficient accuracy for ordinary clinical work by the very simple method of Van Slyke and Palmer. Alkali therapy for diabetic acidosis may be required urgently in those cases in which the acidosis is due to other acids than the ketones.

Relation Between the Fatty Acid Glucose Ration and the Excretion of the Acetone Bodies in Diabetes

DR. EDWARD H. MASON, Montreal, and DRS. HENRY B. RICHARDSON and WILLIAM S. LADD, New York: By means of the respiration calorimeter, we determined the quantities of protein, fat and carbohydrate oxidized by diabetic patients at rest. These data were used to compute the fatty acid glucose ration, using the formula of Woodyatt. A close parallelism was found to exist between this ratio and the threshold of excretion of the acetone bodies. Ketosis was defined as the elimination in the urine per twenty-four hours of 1 gm. of acetone bodies expressed as acetone. At the threshold of ketosis, the ratio was about 1.5, the level at which, in theory, one molecule of glucose is oxidized for every molecule of keto-acid present. Diabetic patients can often take, without ketosis, diets containing a much larger proportion of fat than this ratio would allow. This is because a high ratio in the diet is often accompanied by a much lower one in the foodstuffs oxidized. The undernourished patient with diabetes tends to draw on his own tissues for extra amounts of protein and carbohydrate, and to store a good deal of the fat that he eats. Safety in the use of high fat diets depends on the patient's having an endogenous supply of utilizable carbohydrate, and on his being able to store fat. It is evident that these factors cannot be predetermined, and that close observation of the patient is required when he is taking a high fat diet. The fall in ketosis often observed in fasting patients with diabetes results from a change in the proportion of the foodstuffs oxidized, such that the fatty acid glucose ratio is diminished. The constancy of the relation mentioned is evidence that the quotient is a true measure of the relative quantities of foodstuffs oxidized.

Ketogenic-Antiketogenic Balance in Diabetes and the Therapeutic Use of Glycerol

DRS. WILLIAM S. MCCANN and R. R. HANNON, Baltimore: Calculations of the ketogenic-antiketogenic balance were based on daily estimates of the foodstuffs actually metabolized by diabetic patients. These estimates were made as follows:

1. Basal heat production plus 10% = requirement at rest in bed.
2. Urine N gm. × 6.25 = protein gm. metabolized (P).
3. Carbohydrate utilized = carbohydrate intake minus sugar of urine (C).
4. Fat metabolized, gm. $= \frac{\text{total heat produced} - 4.1\ (P + C)}{9.3}$
5. Woodyatt's factors for fatty acid and glucose.
6. Shaffer's factors for molecular amounts of ketogens and antiketogens.

There is a parallelism between FA:G ratios and acetone body excretion in urine on corresponding days in diabetic patients. Ketonuria disappears generally when FA/G = 1.5, or K/A = 1, but this is not always true.

Tables are given showing the ratios of K′:A. K′ = estimated millimols of ketogens completely oxidized. A = estimated antiketogens utilized. During periods of excessive ketonuria, the ratios vary from 0.9 to 2.8.

Glycerin, gram for gram, is as antiketogenic as glucose. Glycerin is not quantitatively converted into sugar (about 40 per cent.). In severe cases of acidosis, the maximum antiketogenic effect can be obtained from glycerin with less hyperglycemic and glycosuric effects than an equivalent weight of glucose or other carbohydrate. On a diet of 40 per cent. cream and glycerol, recovery occurred though the carbon dioxid combining power had been only 12 per cent. by volume.

Action of Insulin in the Utilization of Sugar in the Body

DRS. RUSSELL M. WILDER and H. D. KITCHEN, Rochester, Minn.: Experiments have been designed to throw light on the rapidity and effectiveness of the utilization of different sugars with varying concentrations of antidiabetic hormone in diabetic patients; *d*-glucose, *d*-fructose, *d*-galactose, *d*-mannose and glycogen have thus far been investigated. The carbohydrate has been fed by mouth; in some experiments insulin has been simultaneously injected subcutaneously. The patient has in each case been prepared by a preliminary standard regimen so that the effects of the ingested carbohydrate on the blood sugar, on the urine, on the heat production and on the respiratory quotient could be compared with a common standard established with glucose. With antidiabetic hormone known to be present, that is, in mild cases of diabetes or cases of diabetes in which insulin is injected, ingested fructose gives evidence from its effect on the blood sugar and on the urine, but especially from its effect on the respiratory quotient, that it is utilized better and more rapidly than glucose. Under such circumstances, glucose often causes an initial drop in the respiratory quotient, and the rise of the respiratory quotient which follows is always appreciably delayed as compared with events fol-

lowing the ingestion of fructose. Under similar conditions, galactose gives evidence of better utilization than glucose, as judged from its effect on blood sugar and urine, and its action resembles that of fructose, as judged by the behavior of the respiratory quotient. Mannose and glycogen behave like glucose.

When the supply of the antidiabetic hormone is much reduced, the effect of glucose on the respiratory quotient may be inconspicuous while that of fructose is still appreciable. The more severe the diabetes, that is, presumably, the less the supply of antidiabetic hormone, the less appreciable is the effect of both glucose and fructose on the respiratory quotient. From this it appears probable that fructose, as well as glucose, is dependent on the antidiabetic hormone for its oxidation, and in the absence of any hormone, neither sugar would be used. The specific dynamic action is affected by all the sugars studied and seems to be little influenced by the presence or absence of the antidiabetic hormone. No explanation is offered of the significance of this.

The Retention and Elimination of Lead

DRS. J. C. AUB and ANNE MINOT, Boston: After lead has been absorbed through the gastro-intestinal or respiratory tracts, it is stored nearly completely in the calcareous portion of the bones. Here it remains normally for long periods, with the gradual release of only small amounts. In one group of animals the esophagus was tied and lead carbonate was introduced directly into the lungs. The animals were given physiologic sodium chlorid solution intraperitoneally. When the animals were killed, within eighty hours after the injection, nearly all of the absorbed lead was found in the bones. In animals allowed to live between 80 and 160 hours, only about 81 per cent. of the lead was found in the bones. When sodium bicarbonate instead of salt solution was injected intraperitoneally, the amount of lead found in the bones did not diminish, but remained at 94 per cent. of the total absorbed lead. This strongly suggested that the reduction of the alkali reserve allowed the liberation of lead from the bones. We next found that in leaded cats starvation will cause the lead to become distributed throughout the organism and be excreted with increased rapidity. Ingestion of large amounts of phosphoric acid has a similar but more marked effect. Using these observations in treating lead poisoning in man, we have found that ingestion of acid causes a markedly increased excretion of lead by the urine and feces. Phosphoric acid is the most effective method so far found. It is more efficient than potassium iodid, and causes a fourfold increase in the rate of lead excretion over that occurring without treatment.

These experiments explain how distortion of the acid-base equilibrium may liberate lead from the bones long after its absorption; they explain why lead poisoning is a chronic disease with possible late acute manifestaitons, and they offer a new method for increasing or decreasing the excretion of lead.

Action of Iodids on the Nonprotein Nitrogen of the Blood

DRS. G. P. GRABFIELD and B. J. ALPERS, Boston: Potassium iodid in small doses (from 0.3 to 0.6 gm., three times a day) caused an average increase of 30 per cent. in the total nonprotein nitrogen of the blood. The rise occurs on the first and second days after administration has been started, and on the third day the figure falls to the previous level. About 70 per cent. showed at some time a pathologic value (more than 40 mg. per hundred cubic centimeters), and in five cases the rise surpassed 70 mg. Sodium iodid causes a rise of only 10 per cent., and in none of the ten cases studied were pathologic heights reached. The average variation of controls under similar conditions is through a range of about 7 per cent. In cases in which potassium iodid was given, there was no change in the level of urinary nitrogen during the period in which the drug was administered (three days); but, following the return of the blood to the normal level, an increase in the output of nitrogen occurred, which, by the rough calculation possible, almost exactly corresponded with the amount that had been retained previously. Sodium iodid was followed by an immediate increase in the total nitrogenous output in the urine. The basal metabolic rate under similar conditions increased very slightly on the day after iodid administration was stopped, but only very little in excess of the limits of error of the method used. Similarly, the phenolsulphonephthalein excretion apparently fell very slightly during the period of iodid administration, but hardly outside the limits of error.

The Rôle of Allergy in Pneumococcus Immunity

DR. G. M. MACKENZIE, New York: Guinea-pigs rendered allergic by repeated intracutaneous injections of pneumococcus antigen have little or no alteration in their susceptibility to infection by the homologous organism. The animals in a state of allergy to the pneumococcus antigen are not anaphylactic, but show a marked cutaneous hypersensitiveness. If the intracutaneous injections are continued over a period of thirty or forty days, the skin allergy disappears. In this postallergic state the susceptibility to infection by the homologous organism likewise differs little, if at all, from the susceptibility of normal controls. In the course of immunization of guinea-pigs with pneumococcus, anaphylactic reactions may be obtained at several stages of the immunization, either with the pneumococcus antigen or with a filtrate from a fresh culture. The existence of such specific sensitization does not appear either to interfere with or to further the development of active immunity. Results indicate that under the conditions of the experiments allergy may exist as a parallel phenomenon without any essential rôle in the development of immunity.

Treatment of Lobar Pneumonia with Kyes' Chicken Serum

DR. J. A. CAPPS, Chicago: During the last three years, and in 1916, Kyes' serum was used in one ward as routine treatment in lobar pneumonia. In all, 305 pneumonia patients were treated with serum. There were seventy-seven deaths, or a mortality of 25.2 per cent. In five control wards, in which no specific therapy was used, during the same period 1,406 patients were treated, with a mortality of 41.2 per cent. The clinical effect of the serum seems to be one of detoxication without materially affecting the course of the disease or the rate of resolution.

Experimental Production of Streptococcus Endocarditis

DRS. R. A. KINSELLA and C. C. SHERBURNE, St. Louis: In human patients, subacute streptococcus endocarditis is a fatal disease: No authentic report of a recovery has ever been published. The mechanism of production of this disease in human beings displays two constant factors—injury of the valve and later infection. The injury is usually represented by either congenital valvular heart disease or rheumatic valvular heart disease. The later implantation of *Streptococcus viridans* on this injury usually takes place through the medium of an infection of the middle ear or throat or some other locality where green streptococci normally breed. Our work consisted in injuring the aortic valve by inserting an appropriate instrument into the left carotid and then, after recovery, the animal is infected by intravenous inoculation of *Streptococcus viridans*. The inoculated bacteria became implanted at the site of the valve injury and there set up a bacterial vegetation identical with that of human patients. Dogs were used in these experiments. Dogs living twelve, thirteen and fourteen days failed to show any kidney lesion of the glomerular type, although larger infarctions were common. A longer survival of the animal seemed essential for producing the kidney picture. In a dog that lived seventeen days, the glomerular lesion consisted of partial thrombosis of the tuft, with hyaline degeneration and with hemorrhage and infiltration with polymorphonuclear leukocytes. One of the most important results of this work is that we have reproduced a bacterial infectious disease which is of sufficient duration to permit thorough study of many of the unknown factors of infection and immunity.

Physicochemical Studies of Calcium Chlorid Diuresis

DRS. D. W. ATCHLEY, R. F. LOEB and E. M. BENEDICT, New York: We have compared the diuresis produced by calcium chlorid in an edematous diabetic man, otherwise normal, with a subsequent spontaneous diuresis following adequate caloric intake under insulin therapy. From 20 to 35 gm. of calcium chlorid a day were given without discomfort to the patient. Marked diuresis began at the end of twenty-four hours. Calcium was eliminated in large part extrarenally. The chlorin of calcium chlorid was excreted mainly by the kidney as ammonium chlorid, with marked increase of ammonia excretion. The p_H of the urine was decreased. Sodium excretion

was increased markedly, whereas potassium and calcium excretion was only moderately increased. In the blood there is approximately molecular replacement of carbonate by chlorid with little change in total base. There is slight increase in the serum protein percentage, but no consistent change in the conductivity. In spontaneous diuresis, the urinary excretion of electrolytes showed no striking difference from that produced by calcium chlorid, except for the absence of the changes caused by such ingestion, the increased ammonia and chlorin output. There was a marked increase in sodium excretion. There was little change in the blood during spontaneous diuresis. The serum protein percentage increased somewhat. Twenty grams of calcium chlorid was then given to a normal person following a period of study. It was found that sodium, chlorin, potassium and ammonia excretions were markedly increased, particularly the sodium and chlorin. Sodium retention was present for three days after calcium chlorid ingestion. The water output was doubled. The blood showed decided increase in the serum protein percentage, great decrease in conductivity, and no change in calcium or chlorin, but a decrease in concentration of sodium and carbon dioxid. Severe gastric disturbance and depression followed the administration of calcium chlorid to this subject.

Contents of Glomerular Urine

DRS. J. T. WEARN and A. N. RICHARDS, Philadelphia: Using the potassium ferrocyanid-acetic acid test, it was found that the glomerular urine from eleven frogs was protein free. The bladder urine collected during the same period was also protein free. During November and December, the blood of frogs was virtually sugar free; the glomerular urine and bladder urine were also sugar free. Dextrose was injected subcutaneously, and with the blood sugar below 0.05 or 0.07 per cent., sugar appeared in the glomerular urine, but was absent in the bladder urine collected during the same period. Later observations showed the sugar content of frog's blood during March to be from 0.01 to 0.3 per cent., and the glomerular urine from these frogs contained sugar while the bladder urine contained none. Tests for chlorid showed chlorid to be present in the glomerular urine and absent in the bladder urine collected during the same period.

Studies on the mode of elimination of several dyes were made. Indigocarmin, methylene blue and phenolsulphonephthalein were injected into the circulation while the kidney was being observed with the microscope. The blue dyes appeared in the afferent vessels immediately after injection, and in rapid succession the glomerular tuft became blue and then the dye was observed passing through the capillaries into the glomerular space. Fluid collected from the glomerulus after the injection of the dye invariably contained the dye. Phenolsulphonephthalein behaved in the same way.

Relation of the Pulmonary Gas Diffusion Constant to Mountain Sickness

DR. GEORGE HARROP, New York: The physiologic effects of high altitudes on twenty-eight persons living at altitudes between 14,000 and 16,000 feet were determined by measuring the amount of carbon monoxid taken up by the lungs, as a whole, per unit of time and per millimeter of pressure difference existing between the alveolar air and the blood in the pulmonary capillaries. The results indicate that almost without exception every person whose diffusion constant, measured at the mean capacity and calculated for oxygen (D_{O_2}), was above 40 did not suffer from the acute symptoms of mountain sickness and generally was free from the chronic discomforts due to prolonged life at high altitudes. On the other hand, those whose value D_{O_2} was 30 or less had marked, often very severe symptoms of the acute type, and the chronic symptoms frequently caused constant, often marked disability. The measurement of the diffusion constant indicates the limit of the rate of diffusion for gases through the lungs. When the factors tending to readjustment have not had adequate time to come into play, the diffusion alone, with the physiologic mechanism still adjusted to high barometric pressures, is of first importance in determining the adequacy of the response at low barometric pressures, that is, the occurrence of the acute symptoms and of their probable severity. On the other hand, a sharp distinction must be made between these acute symptoms, suffered to a varying degree by the majority of persons who climb in a short space of time to an altitude of 12,000 feet or more, and the more chronic indications of the lack of physiologic adjustment manifested by some of those who live there. The question of susceptibility to the more chronic form is complicated by the uncertain efficiency of the physiologic factors tending to readjustment in a given person. Probably of chief importance in this readjustment is the increased tolerance of the central nervous system to lowered oxygen tensions, and the improved oxygen utilization. Of less importance are increased pulmonary ventilation and increased hemoglobin.

The Relationship of the Chlorid Content of Red Corpuscles to Their Percentage Volume

DRS. T. E. BUCKMAN and H. T. EDWARDS, Boston: Our observations are not in accord with those of Norgaard and Gram. In a series of forty cases including normal subjects, cases of anemia of various types and cases of polycythemia, we found a definite increase in the sodium chlorid content of the red corpuscles, proportionate to the increase in the volume percentage of red cells. No depression of the chlorid content of the red corpuscles peculiar to pernicious anemia was observed. We obtained low values, from 150 to 250 mg. of sodium chlorid per hundred cubic centimeters of red corpuscles in all types of anemia, with very low cell volumes, from 6 to 15 per cent. The elevation of the sodium chlorid content was found to be not in any way peculiar to polycythemia vera but was observed also in cases of increased cell volume due to other causes, such as congenital heart disease, chronic carbon monoxid poisoning, and emphysema. With cell volumes as high as 70 per cent. we found the sodium chlorid content to be as high as 440 mg. per hundred cubic centimeters of red corpuscles.

The Electrocardiographic Changes Following the Occlusion of the Left Coronary Artery

DR. F. M. SMITH, Chicago: An electrocardiographic study was made of eleven patients. In one case the descending branch of the left coronary artery was ligated in the repair of a stab wound of the heart. In two cases the clinical diagnosis of coronary thrombosis was verified at necropsy. In the remaining eight cases the character and duration of the cardiac pain and the subsequent clinical course was as characteristic of coronary closure as in those cases in which the diagnosis was checked by necropsy. Changes in the T-deflection and a decrease in the amplitude of the Q-R-S group were the most constant electrocardiographic findings. In six patients there was a decrease in the amplitude of the Q-R-S group. These changes in the T-deflection and the amplitude of the Q-R-S group resemble very closely those of the dog following the ligation of the branch of the left coronary artery. These observations indicate that the electrocardiograph may be employed to advantage in the diagnosis of a thrombosis of the left coronary artery in man.

Electrocardiographic Evidence of Myocardial Involvement in Rheumatic Fever

DRS. H. F. SWIFT and A. E. COHN, New York: Electrocardiograms were taken, regularly of all patients with rheumatic fever. In a large number, distinctly abnormal electrocardiograms were obtained. The changes consisted not only of heart block and prolonged auriculoventricular conduction time, but also of other types of altered auriculoventricular mechanism, as well as changes of a transient nature in the form of the ventricular (Q-R-S) complex. Changes such as the last are interpreted as indicating the development or presence of lesions in those structures of the heart on the functioning of which the electrocardiogram depends. At the time of the appearance of these abnormal complexes there are usually clinical signs of cardiac abnormality, such as cardiac pain, precordial hyperesthesia, disturbed rhythms, or alteration in the character of the heart sounds. In certain cases, abnormal electrocardiograms are the only evidences of myocardial derangement.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Detroit

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School Health Supervision. I. V. Hiscock, New Haven, Conn., and W. T. Fales, Baltimore.—p. 259.
Viability of Bacterium Coli Group Under Natural and Artificial Conditions. C. C. Young, Lansing, Mich., and M. Greenfield, Santa Fe, N. M.—p. 270.
Proposed Standard for State Vital Statistics. L. E. Ross, Sacramento, Calif.—p. 274.
Benzol Poisoning. J. F. Hogan and J. H. Shrader, Baltimore.—p. 279.
Odors. Their Sanitary Significance and Their Elimination. J. R. Earp. —p. 283.
Relationship Between Tuberculin Testing, Vitamins, Pasteurization and Public Health. H. A. Harding, Detroit.—p. 293.
Some Results of National Cancer Week—1922. J. E. Rush.—p. 296.
Hemolytic Streptococci in High Grade Milks. W. D. Frost and F. M. Bachmann, Madison, Wis.—p. 300.

American Journal of Roentgenology and Radium Therapy, New York

10: 175-258 (March) 1923

New Growths Within Chest: Roentgen Ray Diagnosis. S. B. Childs, Denver.—p. 175.
New Growths Within Chest. J. N. Hall, Denver.—p. 182.
Traumatic Diaphragmatic Hernia of Stomach; Operation; Recovery. P. L. Farinas, Havana, Cuba.—p. 187.
Sacro-Iliac Arthrosis Obliterans. E. S. Blaine, Chicago.—p. 189.
Value of Grant's Pins in Open Treatment of Fractures as Seen Roentgenologically. D. Y. Keith and J. P. Keith, Louisville.—p. 195.
*Effect of Small Doses of Roentgen Rays in Certain Forms of Impaired Hearing. D. C. Jarvis, Barre, Vt.—p. 201.
*Treatment of Defective Hearing by Small Doses of Roentgen Rays. J. McCoy, New York.—p. 203.
Rôle of Radium Needles in Treatment of Neoplastic Diseases. W. L. Clark, Philadelphia.—p. 204.
Suppurative Osteomyelitis of Left Side of Pelvis. I. P. Levi, Anniston, Ala.—p. 208.
*Glass Retained in Hand and Foot. A. S. Risser, Blackwell, Okla.—p. 210.
Statistics and Technic in Treatment of Malignant Disease of Skin by Radium. H. Morrow and L. Taussig, San Francisco.—p. 212.
*Technic of Treatment of Carcinoma of Cervix Uteri with Combination of Roentgen Rays and Radium Rays. H. Schmitz, Chicago.—p. 219.
New Radium Chart. L. A. Pomeroy, Cleveland.—p. 229.
Treatment by Radium of Cancer of Rectum. H. H. Bowing and F. W. Anderson, Rochester, Minn.—p. 230.
Possible Dangers in Connection with Use of Roentgen Rays and How to Avoid Them. J. S. Shearer.—p. 240.

Effect of Small Doses of Roentgen Rays in Certain Forms of Impaired Hearing.—Jarvis reports the case of a man, aged 40, who was treated by means of the roentgen rays for an enlarged lingual tonsil. One week later, the patient reported that the right ear, which had been "stuffy" for ten years, was clear, and that hearing was improved. One month later, having a patient who had appeared at varying intervals for inflation of both ears by means of the eustachian catheter, and not succeeding readily in restoring the hearing by means of the usual inflations, a trial of the roentgen rays was suggested, the area exposed for treatment being that recommended by Witherbee in treating tonsils. Two days later, the patient stated that his hearing was restored, the sensation of stuffiness in his ears was relieved, and that he experienced no difficulty in hearing while waiting on customers. As other cases were treated, it became apparent that all patients complaining of impaired hearing were not improved. As observations were continued, it was noticed that the patient whose throat symptoms were usually a prominent part of the clinical picture, responded best to the use of the roentgen rays. A study of these subjects disclosed the fact that the inferior and middle turbinates were often increased in size, that lymphoid nodules were present on the posterior pharyngeal wall, and often a prominent band of lymphoid tissue ran up either side of the pharynx just posterior to the posterior tonsillar pillar. A study of the lymphoid tissue present in the throat following the use of the roentgen rays showed that in forty-eight hours it markedly decreased in size and redness, and with it the catarrhal discharge from the throat. It was concluded that the results obtained were due to the effect of the roentgen rays on lymphoid tissue. There is another effect of the use of small doses of the roentgen rays, and that is its effect on head noises. In the type of patient mentioned the treatments so far have not failed to give relief. When head noises occur in the elderly type of patient, relief does not seem to be so often accomplished.

Treatment of Defective Hearing by Small Doses of Roentgen Rays.—Using Stokes' method of applying the roentgen rays in turn to the regions of the right ear, left ear, the occiput and the open mouth in a direction toward the pituitary gland in forty-five cases of chronic catarrhal, purulent and residual otitis media and otosclerosis, McCoy has achieved satisfactory results. In only nine cases was there no improvement whatever.

Glass Retained in Hand and Foot.—In one of Risser's cases an irregular piece of glass, measuring 1¼ by ⅝ inches, was removed from beneath the deep plantar fascia nineteen years after the patient had stepped into a box of glass. In the second case a large triangular fragment of glass was removed from between the third and fourth metacarpal bones twenty months after its entrance. In neither case had any symptoms been manifested until just before seeking medical advice.

Treatment of Carcinoma of Cervix Uteri with Roentgen Rays and Radium.—Methods for the determination of the intensities of roentgen rays and gamma rays are described by Schmitz and a definition is given of the biologic unit of the radiation dose. It is designated as a 100 per cent. erythema skin dose (E. S. D.). This dose is measured with an iontoquantimeter, that is, it is standardized. The same dose, therefore, may be reproduced for all qualities of rays. The lethal carcinoma dose has been determined. It is, on an average, from 110 to 130 per cent. of an E. S. D. A technic has been developed by Schmitz, based on these investigations, which he says enables any one to solve the problem of the successful treatment of cervical carcinomas with the combined use of roentgen rays and gamma rays of radium.

Journal of Bone and Joint Surgery, Boston

5: 180-396 (April) 1923.

Importance of Correct Furniture to Assist in Best Body Function, as Recognized by Massachusetts Institute of Technology and Smith College. J. E. Goldthwait, Bostor.—p. 180.
Study of Gaits. C. L. Lowman, Los Angeles.—p. 185.
*Clinical Study of Thirty Cases of Muscular Dystrophy. R. V. Funsten, Iowa City, Ia.—p. 190.
Types of Tubercle Bacilli Concerned in Surgical Tuberculosis. G. R. Girdlestone, Oxford, England.—p. 204.
*Abnormalities of Fifth Lumbar Transverse Processes Associated with Sciatic Pain. B. H. Moore, Chicago.—p. 212.
*Operative Treatment of Hallux Valgus. D. Silver, Pittsburgh.—p. 225.
*Operation for Relief of Flexion-Contracture in Forearm. C. M. Page, London.—p. 233.
Concerning Diagnosis of Lesions of Lateral Process of Fifth Lumbar Vertebra and of Its Removal. J. T. Rugh, Philadelphia.—p. 235.
Fracture of Neck of Femur Without Shortening. H. L. Taylor, New York.—p. 237.
Obturator Dislocations. Report of Four Cases. J. T. Watkins, San Francisco.—p. 243.
Retardation of Growth Following Poliomyelitis. P. W. Nathan, New York.—p. 260.
Coxa Plana and Its Causation. M. Jansen, Leiden, Netherlands.—p. 265.
Results of Tendon Transplantation for Intrinsic Hand Paralysis. (Ney's Operation.) J. G. Johnstone, London.—p. 278.
*Treatment of Flail Ankle; Panastragaloid Arthrodesis. A. Steindler, Iowa City, Ia.—p. 284.
Electrical Treatment of Infantile Paralysis and Other Lower Neurone Lesions. G. M. Levick, London.—p. 295.
Congenital Radio-Ulnar Synostosis. Treatment. A. Gibson, Winnipeg, Man.—p. 299.
Bone Block at Hip Joint. W. Truslow, Brooklyn.—p. 305.
Pathology and Treatment of Tuberculosis of Hip-Joint. J. K. Young, Philadelphia.—p. 313.
Value of Roentgen Ray in Diagnosis and Prognosis of Sarcoma of Long Bones. H. W. Meyerding, Rochester, Minn.—p. 323.
*Unusual Case of Congenital Asymmetry of Pelvis and Lower Extremities. G. Peremans, Boston.—p. 331.
Physiotherapy in Back Sprains. A. Gottlieb, Los Angeles.—p. 339.
Case of Myositis Ossificans Progressiva, with Bibliography. J. J. Nutt, New York.—p. 344.

Muscular Dystrophy.—Of the thirty cases analyzed by Funsten four were of the juvenile form, coming on at the ages of 12, 15, 18 and 21 years, respectively, and usually starting as the upper girdle type. The other twenty-six were

of the infantile form, and more frequently started as the girdle type, the weakness being noticed in the lower limbs, with difficulty in getting up from the floor and in going upstairs. Stumbling, lordosis, waddling gait, and loss of reflexes were the characteristic symptoms. Twenty-four cases were of the infantile type, either the hypertrophic or atrophic form. There were two cases of the facio-scapulo-humeral type. Seven cases were beyond the walking stage and had various contractures. Twelve cases were treated for from two weeks to three months with various glandular extracts without any appreciable effect. Seven cases were treated with calcium lactate and eleven with massage and exercises (either with or without glandular treatment). It is felt that calcium lactate is of some benefit. Wassermann tests made in fourteen cases were negative. The microscopic blood picture was normal in six cases examined. The reflexes were either absent or greatly diminished in all cases, with the exception of the cremasteric and abdominal reflexes, which, as a rule, were present. Microscopic examination of muscle, made in four cases, showed the fibers to be pale, with diffuse areas of granular degeneration and vacuolization. There were also areas of fat infiltration between the muscle fibers. The striations were present, except in a few places where complete degeneration had taken place. Of the thirty cases, twenty-three patients are known to be living, three are dead from intercurrent diseases, and four have not recently been heard from. In none of the cases was there any tangible connection between the onset of the disease and acute infectious diseases. In no case was the onset acute.

Sciatic Pain Associated with Abnormalities of Lumbar Vertebrae.—The clinical picture in the nine cases cited by Moore was that of irritation of the sciatic nerve, combined usually with some deviation of the spine from the vertical. It does not differ materially from the picture presented by arthritis of the lower lumbar spine associated with sciatic pain, except that there is less general rigidity of the spine and more localized limitation at the lumbosacral junction. The roentgen ray is the determining factor in the diagnosis, but one plate is not a safe guide. Several roentgenograms should be made at varying angles, or stereoscopically, to determine completely the relations of the process to the sacrum and ilium. Furthermore, in cases with a marked list of the spine, the roentgen ray may not show the process in contact with the ilium, yet at operation these structures are found in close contact. The list of the spine is apparently an attempt to draw the process away from the ilium. The mechanism of the production of the pain is an open question. By amputation of the affected processes the pains have been relieved and the motion of the spine improved. None of the patients were put in plaster or braces, and they were gotten out of bed in from ten to fourteen days. Back-bending exercises were begun as soon as they could be done with comfort. In two cases, the process was not completely removed, yet the symptoms were relieved. In these cases the removal of a portion of the ilium was probably the effective part of the operation.

Operative Treatment of Hallux Valgus.—Silver describes a method of operating in these cases which differs from other methods mainly in the manner of treating the internal and the external portion of the capsule and the definite attempt to restore muscle balance.

Muscle Sliding Operation to Relieve Flexion-Contracture.—Rather than to shorten both bones of the forearm, or elongate the individual tendons which have become shortened, Page has carried out in six cases a muscle-sliding operation. The attachments of the whole flexor group of the forearm are systematically detached from their origin, the supracondylar ridge is cleared and the common tendon of origin of the flexors is cut close to the internal condyle and stripped away from the lateral ligament (the elbow joint is usually opened at this stage). The aponeurosis on the ulnar side of the subcutaneous aspect of the ulna is then cut through in its whole length close to the bone. The muscle mass so loosened is raised from the surface of the bone with a raspatory, any definite tendinous origins below the coronoid process of the ulna are divided with the knife, the insertion of the brachialis anticus being fully exposed. If the flexor longus pollicis is contracted the process of muscle-stripping is carried across the interosseous membrane so that the attachment of the thumb flexor to the front of the radius can also be raised. Lastly, the bicipital fascia is cut through if it appears to offer any opposition to the descent of the muscle group. The whole muscle group will be made to descend an inch or more from its origin. This procedure is but the first stage toward the restoration of the use of the hand. Careful splintage and the usual physiotherapeutic measures must be employed in order to complete the cure.

Panastragaloid Arthrodesis for Flail Ankle.—The method used by Steindler is essentially a modification of the technic devised by Goldthwait, but with the extension of the fusion to all joints of the whole ankle excepting the articulation between the cuboid and the calcaneum. The cases which have been largely selected for the use of this method were those of drop and drop dangle foot. Most of the cases of the cavus and calcaneocavus deformity were reserved for Whitman's operation. Clinical experience has convinced Steindler that the resulting arthrodesis is equal in stability to that obtained by other methods, and in addition to this it may be argued that the method described is not mutilating and that it is extremely simple in execution.

Congenital Asymmetry of Pelvis and Leg.—Peremans' patient presented an asymmetrical pelvis, a small, shortened femur with some atrophy of the shaft. The left tibia was narrower than the right, with some atrophy also; the left fibula medially rotated, without narrowing; there was no bone destruction, but a marked decreased density throughout these bones. There was a visible atrophy of all muscles between the anterior superior spine and the ankle, but principally marked in the buttock and the mesial region of the lower third of the thigh. All the motions of the joints were normal in both legs, except that extreme abduction of the right thigh was prevented by some contraction of the adductors, and except, also, total extension of the left knee, which remained flexed to about 25 degrees, because of the contraction of the inner hamstrings, combined with the lessened power of the quadriceps. The back showed a slight total left dorsal curve. The patient walked with the pelvis tilted downward toward the left side, with the left knee slightly flexed. There was a double genu valgum, adduction of both legs and a left equinus.

Journal of Experimental Medicine, Baltimore

37: 431-600 (April) 1923

Distribution of Rickettsia in Tissues of Insects and Arachnids. E. V. Cowdry, New York.—p. 431.
*Determination of Lung Volume Without Forced Breathing. D. D. Van Slyke and C. A. L. Binger, New York.—p. 457.
*Experimental Studies of Nasopharyngeal Secretions from Influenza Patients. XII. Effects of Subcutaneous Injections of Vaccines of Bacterium Pneumosintes in Man. P. K. Olitsky and F. L. Gates, New York.—p. 471.
*Relation of Tetanus Bacilli in Digestive Tract to Tetanus Antitoxin in Blood. C. Tenbroeck and J. H. Bauer, Peking, China.—p. 479.
Relation of Antibody to Rate of Disappearance of Circulating Antigen. G. M. Mackenzie and E. Frühbauer, New York.—p. 491.
*Experimental Studies on Inflammation. II. Experimental Chemical Inflammation in Vivo. E. P. Wolf, Chicago.—p. 511.
*Prophylaxis and Treatment of Syphilis. H. J. Nichols and J. E. Walker, Washington, D. C.—p. 525.
*Mechanism of Bacteriostasis. J. W. Churchman, New York.—p. 543.
*Influence of Sodium Salicylate on Arthritis of Rabbits Inoculated with Nonhemolytic Streptococci. H. F. Swift and R. H. Boots, New York.—p. 553.
*Influence of Calcium Chlorid on Experimental Botulism. I. C. Hall and N. C. Davis, Berkeley, Calif.—p. 585.

Determination of Lung Volume Without Forced Breathing.—The method described by Van Slyke and Binger determines total capacity and its subdivisions coincidently. The maximum error of the method is estimated at ± 3 per cent. of the lung volume determined. Considerably greater variation from the mean may be encountered, however, because of inconstancy in the lung positions assumed by the subject.

Effect of Injection of Bacterium Pneumosintes Vaccines.—Thirteen volunteers were injected subcutaneously with a vaccine prepared from two strains of *Bacterium pneumosintes*. Three doses were given corresponding, by capacity tests, to 1,000, 2,000 and 2,000 million staphylococci. The intervals between the several injections were five and eight days.

Local reactions of mild and transitory character only were noted. Constitutional reactions also mild and transitory, consisting of headache, depression and generalized muscular pains, were infrequently observed. None of the men was prevented by the vaccine from pursuing his ordinary duties. The vaccinations induce a transitory leukocytosis and lead to the appearance of specific agglutinins in the blood serum.

Relation of Tetanus Bacilli in Digestive Tract to Tetanus Antitoxin in Blood.—The serums of twenty-six persons who carried tetanus bacilli in their digestive tracts were examined by Tenbroeck and Bauer and all were found to contain appreciable amounts of antitoxin. The serums of thirty persons in whose stools no tetanus-like organisms were found were, with two exceptions, free from tetanus antitoxin. Although the authors have been unable to measure accurately the antitoxin content of these human carriers of tetanus bacilli, 0.1 c.c. of serum neutralizes ten or more M. L. D. (minimum lethal doses) of toxin and it is evident that they have acquired an active immunity due to the bacilli in the intestinal tract. These results are said definitely to prove that tetanus bacilli grow in the intestinal tract of man. Many of the subjects who have no tetanus bacilli in their intestinal tracts and whose serum is free from antitoxin show agglutinins to tetanus bacilli. It is probable that they have been carriers of the bacilli in the past and that the agglutinins have persisted longer than the antitoxins. It seems likely, therefore, that these persons are potentially immune to tetanus. If tetanus bacilli can be established in the digestive tract of man, there is a means of immunization which might be useful in armies or in regions where tetanus infections are common, though the authors do not recommend this method of immunization at present.

Experimental Chemical Inflammation.—All substances tested by Wolf which produced marked and rapid inflammation on injection were positively chemotactic, but not all strongly positive chemotactic substances produced inflammation; i. e., calcium compounds, sodium phosphate, etc. Only substances which were positively chemotactic and also soluble in oil seem capable of producing inflammation in animals.

Prophylaxis and Treatment of Syphilis.—By inoculating the scarified surface of both sides of the scrotum of rabbits with suspensions of *Spirochaeta pallida*, 100 per cent. infections were obtained by Nichols and Walker on one side or the other. Infection through the unbroken skin could not be produced. By gland transfers from animals with positive local inoculations, 87.5 per cent. of takes were produced. These two methods were used by Nichols and Walker to test the prophylactic value of 30 per cent. calomel ointment. (*a*) Calomel ointment proved efficacious up to eight hours after inoculation with syphilis. (*b*) No marked difference appeared between the action of calomel in a base of lanolin and petroleum and in a base of benzoinated lard and wax. (*c*) Death from mercurial poisoning was produced in rabbits by a single application of a large amount of calomel ointment. The method of gland transfers was used to test the sterilizing effect of arsphenamin and neo-arsphenamin on old infections in the rabbit. The infection was completely abolished in every instance, whether by one, two or four intravenous doses.

Mechanism of Bacteriostasis.—Churchman observed that between gram-positive and gram-negative organisms gentian violet exhibits the same type of selective activity whether the dye be added to the medium on which the bacteria are planted unstained (extrinsic bacteriostasis), or the organisms be stained with it before being planted on plain agar (intrinsic bacteriostasis). In both instances the gram-positives are inhibited and the gram-negatives remain unaffected. Between gram-positive spore bearing aerobes and the commoner gram-negative bacteria, acid fuchsin, related sulphonic substances, and the flavines exhibit one type of selective activity when the dye is added to the medium (extrinsic bacteriostasis) and the opposite type when it is added directly to the bacteria (intrinsic bacteriostasis). In the former case, the gram-positive spore bearers are inhibited and the gram-negatives remain unaffected; in the latter case the gram-negatives are inhibited and the gram-positive spore bearers remain unaffected. Selective bacteriostasis is not necessarily conditioned by selective penetrability. Stained organisms may grow, and dyes which do not stain well may inhibit reproduction. Churchman says there is evidence that the phenomena of bacteriostasis may be due to changes effected by the dye at the surface of the organisms.

Sodium Salicylate in Arthritis.—Rabbits inoculated intravenously by Swift and Boots with nonhemolytic streptococci, while under the influence of full therapeutic doses of sodium salicylate, developed almost as many inflamed joints as the untreated controls similarly inoculated. The salicylated rabbits, on the other hand, had a much higher proportion of mildly inflamed joints than did the controls. This anti-inflammatory action was most evident in the animals inoculated with streptococci of the lowest virulence, and could not be demonstrated in animals inoculated with hemolytic streptococci.

Influence of Calcium Chlorid on Experimental Botulism.—Hall and Davis state that calcium chlorid given subcutaneously, intraperitoneally, or intravenously has been found to have no effecet on the production of botulism following the injection of *Bacillus botulinus* (strain 80B) into the peritoneal cavity of guinea-pigs.

Journal of Infectious Diseases, Chicago

32: 247-314 (April) 1923

*Immunologic Significance of Vitamins. I. Influence of Lack of Vitamins on Production of Specific Agglutinins, Precipitins, Hemolysins and Bacteriolysins in Rat, Rabbit and Pigeon. C. H. Werkman, Ames, Ia.—p. 247.
*II. Influence of Lack of Vitamins on Resistance of Rat, Rabbit and Pigeon to Bacterial Infection. C. H. Werkman, Ames, Ia.—p. 255.
III. Influence of Lack of Vitamins on Leukocytes and Phagocytosis. C. H. Werkman, Ames, Ia.—p. 263.
Gas Production by Bacteria in Symbiosis. H. J. Sears and J. J. Putnam, Portland, Ore.—p. 270.
*Intestinal Flora in Diarrhea. L. E. Hines, Chicago.—p. 280.
*Variations in Streptococcus Hemolyticus on Animal Passage. J. E. Walker, Washington, D. C.—p. 287.
Incidence and Classification of Staphylococci in Throats of Normal Persons and Persons with Common Colds. Influenza Studies. XII. N. P. Hudson, Chicago.—p. 297.
Study of Bacterial Products by Means of Excised Mammalian Heart. I. Endotheliotoxin of S. Cholerae. W. H. Manwaring, W. H. Boyd and S. Okami, San Francisco.—p. 307.
*II. Subhemagglutinin, Endotheliotoxin and Myotoxin of Streptococcus Hemolyticus. W. H. Manwaring, W. H. Boyd and R. C. Chilcote, San Francisco.—p. 309.

Immunologic Significance of Vitamins.—The results of Werkman's experiments lead him to conclude that cataphylaxis in animals suffering from the lack of vitamins is not the result of the destruction or paralysis of the antibody forming mechanism that produces agglutinins, precipitins, hemolysins, or bacteriolysins.

Lack of Vitamins and Bacterial Infection.—In this series of Werkman's experiments, rats, rabbits and pigeons suffering from pronounced vitamin deficiencies suffered a marked break in their resistance to infection. Rats and rabbits lacking vitamin A became less resistant to infection with the anthrax bacillus and the pneumococcus. As rats suffering from the lack of vitamin B likewise developed an increase in susceptibility to the anthrax bacillus and pneumococcus, the cataphylaxis is not peculiar to vitamin A deficiency. The results are similar to starvation susceptibility. Pigeons fed on a diet lacking vitamin B only, and pigeons fed on a diet of polished rice, readily succumbed to infection with the anthrax bacillus and the pneumococcus, while the control pigeons survived.

Intestinal Flora in Diarrhea.—The intestinal flora in eight cases of diarrhea, connected with intestinal lesions, studied by Hines was proteolytic, while in two cases of fermentative diarrhea the flora was aciduric; but in another similar case, the flora was proteolytic. Spores of *B. welchii* were present in great numbers in stools with a proteolytic flora and absent in those with an aciduric flora.

Effect of Animal Passage on Streptococcus Hemolyticus.—Evidence is presented by Walker that tends to show that the "moist" type of colony, characteristic of the so-called *Streptococcus epidemicus*, is but a temporary character, and may be acquired by an ordinary *Streptococcus hemolyticus*. The

virulence of a strain having acquired this "moist" type of growth is greatly increased, and the virulence decreases with the loss of these special characteristics. The confirmation of the fact that an ordinary strain of *S. hemolyticus* may acquire the properties of *S. epidemicus* is believed to have an important bearing on the epidemiology of "septic sore throat." It is suggested that, analogous to observations on other bacteria, the antigenic properties of hemolytic streptococci may possibly also vary along with these variations in the character of the colony.

Toxic Products Produced by Streptococcus Hemolyticus.—*Streptococcus hemolyticus* grown in 10 per cent. defibrinated rabbit blood in Locke's solution gave products producing the following toxic reactions on the excised rabbit heart: (*a*) intravascular hemagglutination; (*b*) marked capillary vasoconstriction; (*c*) slightly increased capillary permeability; (*d*) auriculoventricular dissociation (heart block); (*e*) marked loss of ventricular tone, and (*f*) reduction in the strength of the ventricular contractions, leading to cessation of recordable movements in from twenty-five to thirty minutes. These reactions are in line with clinical observations and necropsy findings.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

21: 161-224 (April) 1923

Detection of Benzene in Cadavers. A. O. Gettler, New York.—p. 161.
Rate of Deposition and Paths of Absorption of Strontium in Rat. E. M. Kinney and E. V. McCollum, Baltimore.—p. 165.
*Action of Camphor, Menthol and Thymol on Circulation. R. St. A. Heathcote, Oxford, England.—p. 177.

Action of Camphor, Menthol and Thymol on Circulation.—Heathcote found that camphor, thymol and menthol depress the isolated heart of both the frog and the rabbit directly, acting on the cardiac muscle. All three agents dilate the coronary vessels. In anesthetized animals, camphor, however given, does not cause a rise of blood pressure, if the dose is not sufficient to cause convulsions. Similarly, after the cerebral hemispheres are removed, no rise of blood pressure occurs even with doses up to 1 gm. per kilogram. There is no convincing pharmacologic evidence that camphor possesses any value whatever as a cardiac or circulatory stimulant. Its value, if any, for this purpose in man should be established or disproved by more exact clinical observations. The unpleasant results which sometimes follow the administration of thymol can readily be explained.

Journal of Radiology, Omaha

4: 105-146 (April) 1923

New Technic for Positive Identification of Sphenoid Sinus and Ethmoid Cells. A. Granger, New Orleans.—p. 105.
Roentgen Rays and Roentgen Ray Apparatus; An Elementary Course. J. K. Robertson, Kingston, Canada.—p. 112.
Bone Tumors Sarcoma. Periosteal Group. Ossifying Type Benign Ossifying Periostitis and Myositis. J. C. Bloodgood, Baltimore.—p. 119.
Relative Value of Roentgen Ray Evidence in Diagnosis of Duodenal Ulcer. C. D. Enfield, Louisville.—p. 127.

Laryngoscope, St. Louis

33: 161-234 (March) 1923

Transatlantic Development of Rhinolaryngology. H. S. Birkett, Montreal, Canada.—p. 161.
Deaf-Mutism. J. S. Fraser, Edinburgh.—p. 177.
Aerocele of Brain; Report of Cases. A. D. McCannel, Minot, N. D.—p. 189.
Value and Ultimate Fate of Bone and Cartilage Transplants in Correction of Nasal Deformities. W. W. Carter, New York.—p. 196.
Diagnosis of Subacute and Chronic Inflammatory Lesions of Mucosa Lining Antrum of Highmore. W. Spielberg, New York.—p. 203.
Conclusions Concerning So-Called Connellan-King Diplococcus. J. J. King, New York.—p. 207.
Safety-Pin in Trachea. R. S. Moore, Syracuse, N. Y.—p. 212.
Removal of Wire Ring in Esophagus. E. G. Gill, Roanoke, Va.—p. 213.
Cresatin. M. D. Lederman, New York.—p. 214.

Michigan State Medical Society Journal, Grand Rapids

21: 177-218 (April) 1923

Visual Changes Due to Sinusitis. Report of Two Cases. W. R. Parker, Detroit.—p. 177.
Civilian Gunshot Wounds of Abdomen. C. F. Vale, Detroit.—p. 183.
Nontuberculous Bronchial Gland Infections in Children. T. B. Cooley, Detroit.—p. 186.
Difficulty of Early Diagnosis of Tuberculosis in Infancy and Childhood. G. L. Bliss, Kalamazoo.—p. 188.
Diagnostic Value of Artificial Pneumoperitoneum in Sterility in Women. B. Friedländer, Detroit.—p. 195.
Paralysis Agitans. F. R. Starkey, Detroit.—p. 199.

Military Surgeon, Washington, D. C.

52: 343-454 (April) 1923

Management of Common Complaints of Ear, Nose and Throat in Troops on Active Service; Relationship Which Should Exist Between Specialist and Medical Officer. P. G. Goldsmith, Washington, D. C.—p. 343.
Functional and Nervous Heart Disorders. A. Hoffmann, Düsseldorf, Germany.—p. 361.
Acute Catarrhal Jaundice. H. C. Michie.—p. 390.
Parliamentary Procedure. A. N. Tasker, Washington, D. C.—p. 422.
Hydrochloric X of Bovine Parathyroid. A. M. Hanson, Faribault, Minn.—p. 434.

Minnesota Medicine, St. Paul

6: 211-278 (April) 1923

Practical Application of Local Anesthesia to Major Surgery. R. E. Farr, Minneapolis.—p. 211.
*Use of Delayed Flap in Secondary Operations on Palate and Antrum. G. B. New, Rochester, Minn.—p. 214.
Heart in Certain of Severe Exhausting Infections. C. L. Greene, St. Paul.—p. 220.
Diagnosis and Treatment of Ureteral Calculi. G. J. Thomas, Minneapolis.—p. 226.
*Training of Laboratory Technician. W. E. King, St. Paul.—p. 233.
Value and Importance of Blood Chemistry in Clinical Medicine. M. Barron, Minneapolis.—p. 238.
Painful Shoulder. A. E. Wilcox, Minneapolis.—p. 245.
Present Status of Medical Opinion Concerning Nature, Diagnosis and Prognosis of Epidemic Encephalitis. C. R. Ball, St. Paul.—p. 248.
*Uterine Fibromyomas Complicating Pregnancy. R. D. Mussey, Rochester, Minn.—p. 256.
Foreign Bodies (Dental Crown, Dental Plate, Granuloma) Removed from Air Passages. P. P. Vinson, Rochester, Minn.—p. 260.
Heliotherapy in Infectious Diseases of Bones and Joints. E. S. Geist, Minneapolis.—p. 263.

Use of Delayed Flap in Secondary Operations for Cleft Palate.—The method which New has found most successful in the closure of both the large and the small openings is the application to cleft palate surgery of the principles employed in using the delayed flap in plastic surgery of the face and neck. The flap is outlined on one side of the opening with the pedicle posterior, and then elevated and placed back in its original bed. At the same time, the opposite side of the opening is elevated from its mesial margin and allowed to fall back. In a week's time the flap is again elevated, the mesial margin trimmed and sutured across the opening to the freshened and elevated margin of the opposite side. During the week of the delay, the blood supply to the flap is improved a great deal and the flap becomes thicker. In the second stage, minute areas of slough, if present, are trimmed off as the margins are freshened. In case the original opening is very large, or the postoperative complete cleft palate is very wide, with marked scarring, the closure may have to be accomplished in two stages. That is, the anterior part of the palate may be closed by delayed flaps from each side in the first stage. The aponeurosis of the palate is not freed at this time. Three months later the closure is completed by the two-stage Langenbeck operation.

Training of Laboratory Technician.—King feels that under present conditions rigid insistence on the maintenance of definite prerequisites for those desiring to become laboratory technicians, would be ill advised. Student technicians should receive a defined, carefully planned course in theory. A certain portion of time should be devoted to textbook assignments, quizzes, lectures and demonstrations. The course should include proper allowance of time for the interpretation of laboratory findings, the elements of medical ethics and the suggestions of specialists who place dependence on different phases of clinical laboratory work. The minimum period for such a course, including theory and didactic teaching is six months. A definite course of studies for such a six months' course is submitted by King.

Uterine Fibromyomas Complicating Pregnancy.—Sixty-six of the 101 patients reported on by Mussey were treated expectantly. Ten had cesarean sections at or near term. Twenty-four patients, on three of whom an abdominal-pelvic

exploration was made, had operations prior to the period of viability. One of these patients, on whom a myomectomy was performed, had a vaginal cesarean section done elsewhere at term. Of the group of sixty-nine patients, including those treated expectantly and those having explorations, seventeen had miscarriages, ten had premature labor, and forty-two had labor at term with thirty-six living children. This shows a slight increase above the normal incidence of miscarriages and a decrease in the number of living children. Following delivery, seventeen of these patients had operations for the removal of the tumor. Twenty-five of the remaining fifty-two reported that they were well, but some had symptoms attributed to the tumors, and twelve among those reexamined were advised that removal of the tumor was not necessary. Four have died, one following hysterectomy for the tumor and three from other conditions. One patient returned five years after confinement with an inoperable carcinoma of the cervix. There were fifteen myomectomies, seven hysterectomies, and eleven cesarean operations in this group.

Nebraska State Medical Journal, Norfolk

8: 117-152 (April) 1923

*Transposition of Viscera (Situs Viscerum Transversus). Report of Case without Transposition of Usual Abdominal Reflex. J. E. Summers, Omaha.—p. 117.
Vitamins. H. M. McClanahan, Omaha.—p. 120.
Surgical Study in Vienna Today. J. W. Duncan, Omaha.—p. 122.
Lumbar Spinal Puncture and Cisternal Puncture. J. J. Keegan, Omaha.—p. 129.
Chronic Endocervicitis. M. W. Flothow, Omaha.—p. 132.
Factors Influencing Safety of Ether Anesthesia. R. M. Waters, Sioux City, Ia.—p. 136.
Syphilis of Upper Air Passages. B. M. Kully, Omaha.—p. 138.
Intussusception. Points in Diagnosis and Plea for Earlier Recognition. F. Clarke, Omaha.—p. 142.
Importance of Pathologic Laboratory in a Hospital. M. G. Wohl, Omaha.—p. 143.

Dextrocardia and Normal Abdominal Reflex.—Summers' case of dextrocardia came to his attention because of pain over the right lower quadrant of the abdomen. Finger pressure over McBurney's point not only produced a characteristic right rectus reflex but also a drawing-up of the right thigh. A diagnosis of subacute recurrent appendicitis was made and operation advised. A right rectus incision disclosed the sigmoid flexure transposed to the right side of the abdomen, the cecum, with its attached appendix, freely movable, transposed to the left side of the abdomen. The pelvic organs were normal. There was also in this case transposition of the spleen, the liver and the heart. The direction of the stomach was from right to left.

New Jersey Medical Society Journal, Orange

20: 109-144 (April) 1923

Asthma. A. Vander Veer, Jr., New York.—p. 109.
Correction of Nasal Deformities Associated with Harelip and Cleft Palate. W. B. Davis, Philadelphia.—p. 113.
Observations in Treatment of Pulmonary Hemorrhages by Artificial Pneumothorax. M. J. Fine, Newark.—p. 119.
Some Newer Methods of Infant Feeding. H. R. Mixsell, New York.—p. 122.
Importance of Sleep in Infancy and Early Childhood. J. H. Marcus, Boston.—p. 127.
Diagnosis and Treatment of Cardiac Irregularities. M. J. Raisbeck, New York.—p. 128.
Elimination of Arsphenamin in Urine. L. Koppel and A. V. St. George, Jersey City.—p. 129.

New York Medical Journal and Medical Record

117: 385-446 (April 4) 1923

Pathogenesis and Treatment of Exophthalmic Goiter in Light of Our Present Knowledge. A. Gordon, Philadelphia.—p. 385.
Physiologic and Pathologic Importance of Thyroid Secretion. H. Stanley-Jones, Southampton, England.—p. 389.
Probable Normal and Pathologic Physiology of Thyroid. J. Rogers, New York.—p. 393.
Results of Treatment in One Hundred Consecutive Cases of Hyperthyroidism. H. A. Freund, Detroit.—p. 395.
Comparison of Basal Metabolic Rate with Histopathology in Thyroid Dysfunction. J. B. Rucker, Toledo, Ohio.—p. 398.
Goiter of Adolescence. J. Selinger, New York.—p. 399.
Endocrines in Gynecology. J. T. Schell, Philadelphia.—p. 401.
Present Day Considerations of Thyroid. J. B. Haeberlin, Chicago.—p. 403.
Relation of Spleen to Metabolism. Review of Literature. J. Rosenbloom, Pittsburgh.—p. 406.
Enlarged Thymus Gland from Viewpoint of Laryngologist. L. Hubert, New York.—p. 412.
Recent Developments in Parathyroid Therapy. H. W. C. Vinew, Cambridge, England.—p. 412.
Some Neurologic and Therapeutic Aspects of Hypophyseal Tumors. I. H. Pardee, New York.—p. 415.
Pituitary Tumors. F. C. Grant, Philadelphia.—p. 419.
Endocrines in Uterine Hemorrhage. W. Lintz, Brooklyn.—p. 422.
Endocrines in Otolaryngology. S. M. Wilson, Philadelphia.—p. 425.
Relation of Endocrines to Internal Medicine. A. H. Hopkins, Philadelphia.—p. 426.

Rhode Island Medical Journal, Providence

6: 51-66 (April) 1923

Atrophic Arthritis. L. T. Swaim, Boston.—p. 51.
Schick Test and Toxin Antitoxin Immunization. H. J. Connor, Providence.—p. 55.

South Carolina Medical Association Journal, Greenville

19: 451-482 (April) 1923

Value of Hospital Standardization to Medical Profession. F. M. Routh, Columbia.—p. 460.
Clinical Results Following One Thousand Nonsurgical Drainages of Pathologic Gallbladders. G. M. Niles, Atlanta, Ga.—p. 463.
Leukocyte Count in Diagnosis and Prognosis of Appendicitis. H. W. Rice, Columbia.—p. 467.

Southern Medical Journal, Birmingham, Ala.

16: 237-326 (April) 1923

*Diagnosis of Abdominal Adhesions. C. W. Strickler, Atlanta, Ga.—p. 237.
*Ileocecal Delay and Vagus Reflex as Etiologic Factors in Bronchial Asthma. J. T. Wolfe, Washington, D. C.—p. 244.
*Malaria in Children and Abuse of Quinin. E. Rosamond, Memphis, Tenn.—p. 252.
Family Group of Typhoid Simulating Meningitis. H. G. Beck and F. A. Ries, Baltimore.—p. 257.
Development of Malaria Control Work in Alabama on County-Wide Basis. S. W. Welch, Montgomery, Ala.—p. 260.
*Methods for Determining Malaria Prevalence. Spleen Rate of School Boys. K. F. Maxcy and C. P. Coogle, U. S. P. H. S.—p. 269.
"Man Made" Malaria. H. R. Carter, Washington, D. C.—p. 279.
Acute Gangrenous or Perforative and Suppurative Retrocecal Appendicitis. J. N. Jackson, Kansas City, Mo.—p. 282.
Transference of Crest of Ilium for Flexion Contracture of Hip. W. C. Campbell, Memphis.—p. 289.
Treatment of Carcinoma of Bladder. W. Neill, Jr., Baltimore.—p. 292.
Problem of Obscure Nose and Throat Affections. E. A. Looper, Baltimore.—p. 298.
Direct Intubation in Neglected and Desperate Cases of Tracheal and Bronchial Diphtheria. C. E. Purcell, Paducah, Ky.—p. 301.
Teaching of Physical Diagnosis and Its Position in Curriculum. I. I. Lemann, New Orleans.—p. 305.
Use of Dispensary in Teaching of Clinical Medicine. L. Hamman, Baltimore.—p. 309.
Use of Dispensary in Teaching of Clinical Surgery. I. Cohn, New Orleans.—p. 312.
Teaching of Surgical Specialty. M. F. Arbuckle, St. Louis.—p. 317.

Diagnosis of Abdominal Adhesions.—Strickler is satisfied that many of the bad results following abdominal operations have been due to the fact that the patients were dismissed too early and did not receive the after-care they should receive. The operation is only the first step toward the cure. All these patients should, following the operation, be placed under the care of a competent internist until they are fully restored to health. In certain instances a rest cure is indicated, followed by a change of scene and environment and an abundance of outdoor exercise. In addition, these patients must be taught the right attitude toward life, its duties and responsibilities.

Ileocecal Delay and Vagus Reflex as Causes of Bronchial Asthma.—Wolfe contends that asthma can be relieved by locating and removing the cause of the hypertonic state of the vagus nerve, and that a majority of the causative pathologic factors will be found within the peritoneal cavity, and that adhesions will constitute a large majority of these intraperitoneal conditions. The production of intestinal toxemia must always be considered as a factor in keeping the patient's health below par. For two years Wolfe has been employing slowly distending enemas daily to distend the colon, following abdominal operations, to prevent the colon from being bound again by adhesions. Under this method no case has given trouble with adhesions following operation. Also he refrains from feeding the patient till the third or fourth day.

Abuse of Quinin in Malaria in Children.—The abuse of quinin in its overdosage to children according to Rosamond,

is almost universal throughout the South. The giving of quinin in surgary syrups to infants and children with gastro-intestinal diseases is deprecated as it may aggravate the existing condition. The giving of overdoses of quinin may account for many nervous phenomena not otherwise explicable.

Spleen Rate for Determining Malaria Prevalence.—In certain areas of high malaria prevalence in the United States, Maxcy and Coogle have found the spleen rate of school boys to be a satisfactory index of this disease. One half of the boys in whose peripheral blood parasites were demonstrated, had enlarged spleens. Of the boys with palpable spleens only 20 per cent. were shown to be positive by a single blood smear. If every boy, or even most of these boys, were potential carriers of malaria infection, the examination of blood smears revealed only about one fifth of the actual chronic malaria.

Tennessee State Medical Association Journal, Nashville

15: 513-552 (April) 1923

Hydrocephalus. T. D. McKinney, Nashville.—p. 513.
Diagnosis and Treatment of Renal Tuberculosis. O. S. McCown, Memphis.—p. 521.
Splinting. Its Principles and Relation to Function. R. W. Billington, Nashville.—p. 524.
Pellagra. M. B. McCrary, Woodbury.—p. 529.
Kidney Surgery. G. R. Livermore, Memphis.—p. 534.
Cesarean Section. J. L. Crook, Jackson.—p. 539.

U. S. Naval Medical Bulletin, Washington, D. C.

18: 291-390 (March) 1923

Mosquito Control in St. Thomas. E. Peterson and F. D. Walker.—p. 291.
Diagnosis and Treatment of Gastric Syphilis. W. A. Brams, Washington, D. C., and E. Antoine, Paris, France.—p. 303.
Scope of Roentgen-Ray Therapy in Naval Practice. E. L. Whitehead, Washington, D. C.—p. 309.
Composition, Equipment, Organization and Operation of Medical Department for Spring Exercises of Marine Corps Expeditionary Force, 1922. C. A. Costello, Washington, D. C.—p. 330.
Samoan Tattooing. D. Hunt and L. Humphreys, Washington, D. C.—p. 346.
Manipulation of Wax for Inlay Patterns. H. E. Harvey, Washington, D. C.—p. 348.
Postoperative Treatment. L. Martin, Washington, D. C.—p. 351.
Fatal Case of Nephritis with Special Reference to Nitrogen Retention. G. A. Alden and C. F. Behrens, Washington, D. C.—p. 365.
Pappataciike Fever Occurring in Cuba. E. A. Stephens, Washington, D. C.—p. 368.
Case with Symptoms of Motor Aphasia Following Neo-Arsphenamin Injection. A. J. Desautels, Washington, D. C.—p. 370.

West Virginia Medical Journal, Huntington

17: 409-450 (April) 1923

Acute Intestinal Obstruction. C. S. Hoffman, Keyser.—p. 409.
West Virginia's Progress with Model Vital Statistic Law. C. F. Raver, Charleston.—p. 419.
Potter Method of Version. D. A. MacGregor, Wheeling.—p. 422.
Focal Infection in Relation to Diseases of Eye. W. F. Beckner, Huntington.—p. 429.
Modern Treatment of Bronchial Asthma and Hay-Fever. O. Biern, Huntington.—p. 433.
Growth within Spinal Canal Comprising Cord and Roots Localized: Operation: Recovery. T. A. Williams, Washington, D. C.—p. 437.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

20: 1-64 (Jan.-March) 1923

*Treatment of Congenital Hypertrophic Pyloric Stenosis. Medicine Versus Surgery. L. Findlay.—p. 1.
Hereditary Tylosis. J. D. Rolleston.—p. 16.
*Rubella without Rash (Rubella Sine Exanthemate). G. Flöystrup.—p. 20.
*Case of Extreme Recurrent Drowsiness in Child, Apparently Due to Hepatic Disturbance. J. Thomson.—p. 23.
Raynaud's Syndrome in Nonsyphilitic Infant, with Remarkable Family History. F. P. Weber.—p. 25.
Case of Congenital Aneurysm of Pulmonary Artery. G. A. Sutherland.—p. 27.
Sudden Death from Blocking of Air Passages by Caseous Gland in Boy Aged Nine Years. F. J. Poynton and W. Williams.—p. 28.
Albuminuria in Family of Children. H. H. C. Gregory.—p. 29.

Treatment of Congenital Hypertrophic Pyloric Stenosis.—Spasm of the hypertrophied pylorus is regarded by Findlay as the most important factor in causing the symptoms in congenital pyloric stenosis. In his experience results of treatment are invariably better in private than in hospital practice. He is convinced that medical measures give as good, if not better, results than operation. Many figures are cited to uphold this assertion. Operation should, he says, probably be reserved for the youngest patients and for those seen soon after the onset of the symptoms. The great danger to be avoided in any form of treatment is underfeeding. The infant with congenital hypertrophic pyloric stenosis requires constant and individual care. In Findlay's opinion it is the absence of this individual care which is such a serious drawback to hospital treatment of disease in infancy.

Rubella Without Rash.—Flöystrup reports what he believes to be a unique case, the first on record, of rubella without a rash. The adenitis and the transient catarrh are pathognomonic symptoms. Flöystrup suggests that such cases may explain an apparent immunity to rubella.

Extreme Recurrent Drowsiness in Child.—Shortly after being weaned, Thomson's patient, aged 5 years, had his first attack of drowsiness. He was apparently in good health at the time. The drowsiness set in suddenly, without any warning. At the onset, the child's hands were noticed to be hot and his face cold and clammy, but there was no rise of temperature, no quickening of the pulse, and no sweating. On a few occasions vomiting occurred, but usually there was none. Wherever he was, he would suddenly say "I am tired," lie down on the floor or on the road, and fall sound asleep. He was put to bed, and generally slept for three days on end, waking once, or sometimes twice, in twenty-four hours to ask for a drink of water and to empty his bladder. He would then fall sound asleep again within a minute or so. His sleep seemed to be of an ordinary healthy character. The second attack occurred three months after the first. Later the intervals became gradually shorter, till when the boy was 3 years old he was having one about every three weeks. Thereafter the attacks decreased in frequency. The only abnormal points found on examination were a thick brown fur on the tongue, a definite increase of the cardiac dulness to the right, with visible epigastric pulsation, and an enlargement of the liver (3 fingers' breadths), which was quite soft. A mixture of sodium bicarbonate, nux vomica, infusion of gentian, and calomel, was given for six months. In the following year the boy had two or three attacks, and then they ceased altogether. He is now aged 21.

Calcutta Medical Journal

27: 49-96 (Feb.) 1923

Coliform Organisms Found in Carbuncles and Open Ulcers. C. C. Basu.—p. 49.
Main Principles of Cardiologic Practice. S. C. Bose.—p. 56.
Case of Anthrax. S. N. Ghosh.—p. 69.
Eye Cases. S. K. Ganguly.—p. 74.
"Anaerobe Edematogene" in Ulcerated Appendix. A. C. Ukil.—p. 76.

Edinburgh Medical Journal

30: 133-188 (April) 1923

Edinburgh Medical School and Its Professors in My Student Days. B. Bramwell.—p. 133.
True Congenital Dislocation of Shoulder. D. M. Greig, Edinburgh.—p. 157.
*Intestinal Obstruction by Unusual Form of Enterolith. B. S. Simpson, Edinburgh.—p. 176.

Intestinal Obstruction by Mass of Twigs.—The obstructing mass in Simpson's case, which measured 4½ inches long by 2¾ inches at its broadest part, was composed of heather roots and twigs wound tightly together till the whole was of almost stony hardness. The patient, aged 16, had for a long time been in the habit of chewing heather while herding cattle. The mass had lodged in the ileum, 16 inches from the ileocecal valve.

Irish Journal Medical Science

5: 1-48 (March) 1923

*Types of Pneumococci Causing Acute Lobar Pneumonia in Dublin. H. F. Moore.—p. 1.

Diagnosis and Treatment of Gastric and Duodenal Ulcers. W. I. De C. Wheeler.—p. 12.
Thrombus of Aortic Valve Infected with Pneumococci. J. H. Pollock. —p. 18.
Application of Radium to Gynecology as Practiced by Vienna School. D. Cannon.—p. 20.

Pneumococcus Types in Dublin.—An analysis made by Moore of the types of pneumococci in 110 cases of pneumonia showed that the incidence of the four types of pneumococci causing acute lobar pneumonia is not very different in Dublin, the London area, or in America. As regards mortality, however, the case is somewhat different: in Type 1 cases, 16.66 per cent. mortality in Dublin as against 25.2 per cent. in America, and no mortality in Type 3 cases as against 56 per cent. in America. The total Dublin mortality was 18.18 per cent. as against 26 per cent. in America.

Journal of Laryngology and Otology, Edinburgh

38: 173-228 (April) 1923

Aim and Use of Special Hospitals. S. Russell-Wells.—p. 173.
*Uncommon Tonsillar Appendage. Its Relationship to Cartilage Formation in Tonsil. A. L. Turner and T. Sprunt.—p. 179.
Oculovestibular Coordination as a Biologic Survival Factor. J. D. Lithgow.—p 187.
Mesothelial Growth of Left Vocal Cord. B. S. Jones.—p. 191.
Three Cases of Zygomatic Mastoiditis. N. Rankin.—p. 192.

Tonsillar Appendage Containing Cartilage.—Turner records a case in which a fingerlike process, attached apparently near the lower pole of the left tonsil posteriorly and hanging free, passed downward into the pharynx. The appendage was removed. Under the low power, the specimen was seen to consist of a central core of loose connective tissue of a vascular adipose type. At the attached end of the appendage the core passed into the tonsil to unite with the connective tissue at its base. Many blood vessels were distributed in the fibro-adipose core, and several irregular islets of cartilage lay in a broken chain extending from the upper to the lower pole of the appendage. Turner inclined to the view that, in this case, either cartilage cells from the second branchial arch or primitive chondrogenetic mesenchyme cells have become included during fetal life in the fibro-adipose tissue situated toward the lower part of the base of the tonsil. The growth of the cartilage cells or the development of the primitive chondrogenetic cells produced a prominence toward the lower tonsillar pole. This became elongated by the act of swallowing and the passage of food aided by the action of the pharyngeal constrictors. The process would be analogous to the formation of polypoid adenoma of the bowel or uterine polypi. The case, apart from the peculiar character of the appendage, seems to correspond in every way with the cases which have been recorded by Mantchik, Ruckert and others, who support the embryonic inclusion theory of origin of the cartilage areas.

Journal of State Medicine, London

31: 151-200 (April) 1923

Influence of Temperature on Antigens and Antibodies. T. Madsen.—p. 151.
Arsenobenzol Treatment of Syphilis. L. W. Harrison.—p. 177.
"Dyscratic Index"; Suggestion for New Method of Feeling Public Health Pulse of Towns or Nations. G. E. Brooke.—p. 183.
Ambulance Department of Order of St. John of Jerusalem as Civic Welfare Auxiliary. H. V. Miller.—p. 187.

Lancet, London

1: 779-832 (April 21) 1923

Psychology of Courage. J. L. Birley.—p. 779.
Cultivation of Tissues and Tumors in Vitro. A. H. Drew.—p. 785.
*Considerations of Sacro-Iliac Joint. C. S. L. Roberts.—p. 787.
Peptone Immunization in Asthma and Other Allergies. A. G. Auld.—p. 790.
*Case of Erosion of Rectum by an Ectopic Placenta. J. A. C. Forsyth. —p. 795.
Treatment of Flail Elbow Joint with a New Operation of Arthrodesis. W. Mercer.—p. 796.
Case of Hypertrophic Peripheral Neuritis. F. G. Hobson.—p. 798.

Mechanics of Sacro-Iliac Joint.—The sacro-iliac joint is considered by Roberts under the following headings: (1) Morphology, (2) gross anatomy, (3) movements, (4) the commoner pathologic conditions of relaxation and strain. In order to understand the mechanics of the sacro-iliac joint, it is necessary to make a brief comparison between the conditions obtaining in pelves of pronograde and orthograde animals. Of the last named he says: Relaxation arranges itself under three headings: (1) The physiologic relaxation associated with menstruation; (2) that associated with pregnancy, being an exaggeration of the normal physiologic condition; (3) that due to trauma, general weakness, or some known pathologic process in which various conditions predispose to joint trouble. Sacro-iliac strain may be of the following types: (*a*) Subacute; (*b*) acute; (*c*) chronic. The symptomatology of sacro-iliac strain and relaxation may be: (1) subjective, as pain; (2) objective, such as abnormal mobility, abnormal attitudes and postures, and abnormal limitation of movements. The danger of diagnosing sacro-iliac disturbance too often is emphasized.

Erosion of Rectum by Ectopic Placenta.—Severe hemorrhage from the rectum was one of the initial symptoms of ectopic pregnancy in Forsyth's case. The illness commenced with a sudden attack of colicky pain in the hypogastrium. The pain was so acute that the patient had to rest in bed for a few days and, on getting up, it returned with increasing severity. Obstinate constipation supervened, and with it intense pain in the rectum, causing a false desire to go to stool. Without the help of enemata the bowels refused to act, and when they did the agony was excruciating. At no time during the illness had any blood or pus been passed per rectum. On examination, a hard swelling about the size of an orange could be felt projecting above the pubes. It was slightly mobile and not tender. Per vaginam, the cervix was found to be high and tightly pressed against the symphysis. The posterior fornix was bulging from the presence of a hard rounded swelling which, per rectum, appeared to be about the size of an egg. No fluctuating point could be detected. Three days after admission the patient had a severe hemorrhage from the bowel and became very pale and collapsed. In the bulging wall of the rectum, just within reach of the finger, was an umbilicated depression. It was decided that most probably the case was one of ruptured tubal gestation with erosion of the rectum by the placental trophoblast. When the abdomen was opened no free blood was found. The suprapubic swelling proved to be the fundus uteri, occupied by a fibroid the size of the closed fist. Signs of old inflammatory trouble were evident in the left tube, which was converted into a small retort-shaped hydrosalpinx, and in the left ovary, which was firmly embedded in the mesosigmoid. The right tube turned sharply down behind the uterus and entered Douglas' pouch, the mouth of which was closed by adhesions. These were separated and the tube traced downward; it was found to terminate in a ruptured tubal gestation. The ectopic gestation had evidently occurred in the ampullary end of the tube, and the gestation sac had been extruded by tubal abortion rather than by tubal rupture, for the ostium, although expanded, was intact, except for a small tear in its upper edge. Part of the mole remained within the cornucopia-like end of the tube. Dissection of the mole revealed a small amniotic cavity containing the crushed remains of a tiny fetus a few millimeters long.

Tubercle, London

4: 289-336 (April) 1923

Advantages and Disadvantages of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. L. S. T. Burrel.—p. 289.
*Association of Bronchitis with Pulmonary Tuberculosis. J. C. McClure. —p. 293.
Advantages and Disadvantages of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. G. E. Soltau.—p. 297.

Better Treatment for Tuberculosis Patients with Bronchitis.—McClure stresses the point that the consumptive who is prone to bronchial catarrh requires much more careful climatic treatment than the one who does not exhibit this tendency, and that a serious attempt to cure recurrent catarrh, even of the nasopharynx, is advisable in all cases of pulmonary tuberculosis. This is important not only in view of the possibility of immediate complications, but in view also of the establishment of a chronic condition which may invalid a patient whose pulmonary tuberculosis has reached the stage of complete arrest, and who might have looked forward otherwise to years of usefulness and comfort.

Archives des Maladies du Cœur, Paris

16: 97-160 (Feb.) 1923

Complete Heart Block from Disturbance of Excitability. Laubry and Doumer.—p. 97.
*Physiologic Dilatation of Heart. E. Bordet.—p. 108.
Arrhythmic Paroxysmal Tachycardia. Gallavardin.—p. 117.
Partial Branch Block. Lutembacher.—p. 120.

Physiologic Dilatation of Heart.—Bordet studied roentgenologic changes of the heart. The supposed diminution of the heart volume after moderate exercise is probably due to the fact that a person asked to hold his breath does it in maximal inspiratory position if he is out of breath after exercise. It is always necessary to compare the height of the diaphragm and not merely measure the heart. Another point which should not be forgotten, is the amplitude of the pulsations of the heart. Exertion easily doubles the amplitude.

Bulletin de l'Académie de Médecine, Paris

89: 331-356 (March 13) 1923

Osteoperiostosis of Bones in Lepra. Delamare and Said Djémil.—p. 345.
Artificial Pneumothorax in Children. F. Armand-Delille.—p. 347.
*Preventive Serotherapy in Whooping Cough. R. Debré.—p. 348.
*Treatment of Wounds. S. Mercadé.—p. 352.

Preventive Serotherapy.—Debré has been applying to scarlet fever, mumps and whooping cough Nicolle's method of prophylaxis with convalescents' serum. He decided by the complement fixation test that the fourth week of whooping cough is the best time for obtaining the serum. Injected after the disease was under way, no effect was apparent, but it prevented the development of the disease when injected during the incubation, except at the very last; even then it materially attenuated the disease. These results were constant in the forty infants and other children thus immunized after prolonged exposure in three separate epidemic foci. The immunization—like that with measles—is probably only transient, but it answers the purpose. The incubation period of whooping cough is so long that ample time is available. He used a mixture of from four to eight serums, kept on ice for several days, injecting 2 or 3 c.c. in children under 3.

Treatment of Wounds.—Mercadé says that asepsis is not enough; material should be supplied the tissues for their regeneration, as the normal supply from within is shut off. Normal tissues do not take up substances supplied from without, but an inflammatory focus seems to absorb them with avidity. He has thus been treating all wounds since 1917, war and peace wounds, burns, chronic ulcers, etc., first gently rinsing the surface. The substance found most effectual is peptone mixed with manganese. Whether it acts by supplying elements from without or by attracting them from within, or both, healing proceeds exceptionally rapidly. Young cells develop by the second day, and the dressings over this powder do not stick to the surface.

Bulletin Médical, Paris

37: 327-414 (March 24-April 7) 1923

*A World-Wide War Against the Venereal Peril. Bayet.—p. 333.
*Hysteria. P. Kahn.—p. 363.
Pithiatism. J. Jumentié.—p. 366.
Hysteria and Mythomania. B. J. Logre.—p. 369.
Hysteria and Psychanalysis. R. Laforgue.—p. 372.
*Syphilis and Tuberculosis in Children. J. Genévrier.—p. 393.
Cancer of the Larynx. F. Bonnet-Roy.—p. 395.

A World War Against the Venereal Peril.—This address on the venereal peril was delivered in a private drawing room at Brussels. Professor Bayet said that circumstances now justify the hope of the complete extinction of the endemic of syphilis in time by sterilization of the contagious. Belgium is peculiarly adapted for this as it is compact and closely settled, and the task was undertaken with energy immediately after the war. The government promptly proceeded to provide the drugs and subsidize clinics and the entire medical profession of the country rallied to the work. Rich and poor are given the drugs without charge and, if unable to pay for treatment, they are treated gratuitously, the state reimbursing the physicians who give the treatment. The expense has been very small, and 17,000 persons were thus given sterilizing treatment last year. "As each syphilitic infects at least two others, on an average, this represents 40,000 preserved from syphilis in one year." This work has been effectively supplemented by a national antivenereal disease league which aims to unite all the social, moral and scientific forces of the country for intensive propaganda on the necessity for therapeutic sterilization of the contagious and avoiding of contagion. The social prominence of the leaders in this movement aided in carrying it to rapid success. Already the proportion of "new" cases of syphilis in his service has dropped to 20 per cent. from the 85 per cent. recorded in 1905 and 1906 in 2,500 cases. He added that a similar movement for concerted international action is the next step. The endemic of syphilis in Belgium is approaching extinction, and the same policy should be applied to all the great seaports of the world as the first measure. He insists that this is feasible. Another pressing measure is the repression of adulteration of the drugs used in the sterilizing treatment of syphilis. The extent of this adulteration, he declared, surpasses all belief. "There should be a central headquarters for the world war against syphilis, to which each nation could apply for advice and counsel."

Hysteria.—Kahn defines hysteria as a psychopathy characterized by three kinds of functional disturbances: morbid suggestibility; hyperemotivity linked to excessive excitability of the sympathetic nervous system, rendering possible organic trophic lesions as a consequence of emotional trauma, and an instinctive preferring of imagined lies to true facts.

Syphilis and Tuberculosis in Children.—Génévrier denies that syphilis induces a predisposition to tuberculosis, or imprints a special character on it, and cites statistics to sustain this view.

Journal de Chirurgie, Paris

21: 273-400 (March) 1923

*Surgical Correction of Crooked Limbs. F. Cadenat.—p. 273.
*End-to-Side Entero-Anastomosis. J. Bloch.—p. 294.
*Rupture of Iliac Arteries from Contusion. G. Jean.—p. 303.

Surgical Correction of Crooked Limbs.—Cadenat gives an illustrated description of the gage and compass which he has devised for precision in wedge resection of the bone in genu valgum or other crippling deformity of the members. His thirty-two illustrations show the technic and the ideal outcome whether the broad end of the wedge faces the concave or the convex side.

End-to-Side Entero-Anastomosis.—Bloch's method seems to combine the advantages of both the end-to-end and end-to-side methods. The anastomosis is made like a stove-pipe; both have the same axial direction until the smaller bowel turns abruptly at a right angle to enter the larger. The junction is made so close to the sutured stump that there is no room for a blind pouch to form. The peristalsis is all in the same direction, and the parts stretch in time until the passage is continuous as with an end-to-end junction.

Rupture of Iliac Artery from Contusion.—Jean adds another case to the six he has found on record of isolated rupture of the common or external iliac artery. Only one of the seven patients survived. The prognosis would be better if the aorta could be compressed at once. In his case he applied the Momburg method of hemostasis, and ligated the external iliac artery and the vein, which was torn at three points. The man died fifteen minutes later.

Journal d'Urologie, Paris

15: 81-160 (Feb.) 1923

*Kidneys with Double Ureters. J. Guyot and Jeanneney.—p. 81.
*Roentgen Ray Treatment in Urology. Nicolich.—p. 89.
*The Ureosecretory Constant. S. Rolando.—p. 95.
*Eosinophilia with Hypertrophied Prostate. M. Negro.—p. 99.
Pyonephrosis from Congenital Hydronephrosis. A. Boeckel.—p. 105.
*Improvised Urinal After Cystostomy. Jeanbrau.—p. 109.
*Calcium Chlorid in Conservation of Catheters. M. Bonnet.—p. 111.
*Renal Crepitation with Calculi. A. G. Casariego.—p. 112.

Kidney with Two Ureters.—Guyot and Jeanneney discuss the great importance of the discovery that with two ureters the kidney is practically a double kidney. This makes it possible to resect one half in case of a circumscribed lesion, and leave a well functioning half. The two ureters may have only a single opening into the bladder. Legueu's patient is still in good health after removal of one kidney for tuber-

culosis and removal of half of the other kidney, which had two ureters. He resected the half kidney first, and waited until complete recovery from this operation before the complete nephrectomy on the other side. In the case illustrated here, one kidney had been removed and the double ureter on the other side had been sutured to the skin, as a vesicovaginal fistula and recurring pyelonephritis had entailed complications. Legueu has encountered double ureters in twenty-two cases, and in five was able to induce a clinical cure by partial resection of the kidney.

Roentgen-Ray Treatment from the Standpoint of an Old Urologist.—Nicolich's rather derogatory remarks have been summarized already, as they were published elsewhere last year. He says of Wetterer's "splendid results" with roentgen-ray treatment in 956 cases of prostatitis, that if the results are so "splendid" why does Wetterer follow the roentgen exposures with systematic daily massage of the prostate, when massage alone is enough to cure prostatitis? After thorough catheter treatment of disturbances from enlargement of the prostate, conditions may improve to such an extent as to simulate a cure. This is the explanation of the alleged "cures" after castration, vasectomy, roentgen-ray treatment and other measures that have been applied for hypertrophied prostate. The benefit from the systematic catheterization and general measures was ascribed to the local measures that had happened to be applied at the time. In Nicolich's experience with 486 tumors of the bladder, the majority malignant, only two instances of perforation of the rectum were observed, and in both of these cases roentgen treatment had been applied.

The Ureosecretory Constant.—Rolando relates that in the Genoa hospital the urine is examined with the Ambard and van Slyke formulas in every case of kidney disease, and the van Slyke formula has proved more reliable and instructive than the Ambard.

Diagnosis of Cancer of the Prostate.—Negro gives the data from twenty-five cases of hypertrophied prostate and eleven of cancer. In 75 per cent. of the first group the number of eosinophils was above normal while the neutrophil polynucleosis was almost invariably normal. With cancer of the prostate, the eosinophils were much below normal and the neutrophil polynuclears much above normal.

Improvised Urinal After Cystostomy.—Jeanbrau slits the upper end of an inner tube from a bicycle and ties the slit ends to tapes around the waist. The tube reaches nearly to the ankle; it is tied to the leg below the knee. It thus serves as a urinal with the patient up and around, the tube from the bladder, or the retention catheter, extending into the gaping top. He adds that rinsing the tube with vinegar water removes all odor of urine, as from rubber goods in general.

Calcium Chlorid for Conservation of Catheters.—Bonnet has found a shallow dish of calcium chlorid in the sterilizers very useful to insure continuous dehydration. It absorbs the moisture completely; by calcining the calcium chlorid occasionally, it can be used over and over again.

Renal Crepitation.—Casariego calls attention to a peculiar sensation felt on bimanual palpation of the kidney when it contains a calculus. The sensation is like that on palpating a bag full of snow. He calls it renal crepitation.

Paris Médical

13: 81-96 (Jan. 27) 1923

*Ocular Disturbances in Respiratory Affections. F. Terrien.—p. 81.
*Transfusion of Blood from Animals to Man. Cruchet and Ragot.—p. 82.
*Pathology of the Intervertebral Foramina. J. Forestier.—p. 86.
Coxalgia and Pseudocoxalgia. E. Bressot.—p. 89.

Ocular Disturbances in Affections of Respiratory Apparatus.—Terrien reviews the mutual relations of ocular and respiratory disturbances. Even a normal inspiration and expiration is accompanied by a slight dilatation and contraction of the pupil. This is of nervous origin and not due to changes in the blood content of the iris. In pneumonia, herpes of the cornea is comparatively frequent. The defect of the epithelium may be easily discovered by the fluorescein test. Dilatation and subsequent contraction of the pupil on the side of a pneumonia or spinal lesion has been found by Chauffard. Three weeks after pneumonia a paralysis of the ciliary muscle (not of the sphincter of the pupil) similar to a postdiphtheric palsy may occur. Sarcomas of the lung and mediastinum may lead to metastasis in the choroid. On the other hand, affections of the eye may have an influence on the respiratory tract: Compression of the eye retards expiration. Irritation of the cornea may stop spasm of the glottis. Strong light can provoke sneezing in some individuals. This is probably due to an increased flow of tears, which irritates the mucous membrane of the nose.

Transfusion of Blood from Animals to Men.—Cruchet and Ragot draw the attention of scientists to the study of transfusion of blood of animals into men. They repeated Oré's experiments, but used citrated blood. They were able to transfuse very large quantities of blood in animals usually without hurting them much. Therefore they gave injections of from 25 to 40 and even 80 c.c. of citrated sheep's blood to ten patients and horse blood to ten other patients, two of whom received it twice. Agglutination in vitro is almost the rule, though there are exceptions. The injection was usually followed by pains in the lumbar region, radiating toward the bladder, slight or severe chills, dyspnea, fever or fall in temperature. These sensations lasted only for a quarter or half an hour. Hemoglobin was found in the urine twice (after sheep's blood); albuminuria occurred frequently. The injection killed immediately only one of their patients, who had received serum before.

Pathology of the Intervertebral Foramina.—Forestier reviews the affections of the spinal nerves passing through these foramina. The most constant clinical sign is a contracture of the dorsal musculature on the opposite side. This contracture is not present if only one root (not the whole nerve) is affected, as in herpes or tabes. The contracture causes a functional scoliosis. The palpation of apophyses of the articulations is painful. The cerebrospinal fluid shows a slight increase in albumin, with a normal number of cells, while affections of the roots cause lymphocytosis. The clinical picture varies according to the region affected. Torticollis, intercostal neuralgia, and the scoliotic form of sciatica (*ischias funiculaire*) with hypesthesia of the radicular type, are different affections of these nerves. A localization in the sacrolumbar joint is indicated by pains during the change from the sitting to the standing position. Secondary neuralgia of the spinal nerves occurs in tuberculosis, cancer, infections and injuries of the vertebrae, in *spondylose rhizomélique*, osteophytic vertebral arthritis, and especially in the preankylosis stage of vertebral rheumatism. One very tenacious form of lumbago is a bilateral affection caused perhaps by hypertrophy of the epidural fat. Five such cases recovered after laminectomy. The differential diagnosis must eliminate visceral troubles (aneurysms, renal calculi), affections of the roots and of peripheral nerves. Epidural injections, colloidal metals, roentgen rays and physical treatment act favorably.

Presse Médicale, Paris

31: 141-152 (Feb. 14) 1923

Physiologic Bases for Intrathoracal Surgery. E. A. Graham.—p. 141.
*Beta Rays of Radium. P. Degrais.—p. 145.
*Pregnancy and Nephrectomy in Renal Tuberculosis. Favreau and Querrioux.—p. 146.

Beta Rays of Radium.—Degrais draws attention to the importance and therapeutic action of the beta rays of radium. The gamma rays constitute 4.8 per cent. of the radiating energy; the beta rays, 3.2 per cent. It is regrettable that the 92 per cent. consisting of alpha rays cannot be utilized. The disadvantage of beta rays lies in the difficulty of measuring the exact amount. The thickness of the filter plays an enormous part in the dosage, while it is almost negligible with gamma rays. The action of beta rays is comparatively superficial, but they have a great repressive action on living cells. They are excellent in some very superficial squamous epitheliomas, eczemas, pyodermias, nevi, lupus and angiomas. The cosmetic effect is very good.

Pregnancy and Nephrectomy in Tuberculosis of Kidneys.—Favreau and Querrioux found a normal development of pregnancy in women who had been nephrectomized for renal

tuberculosis. The prognosis is good for mother and child in unilateral cases.

31: 153-164 (Feb. 17) 1923

*Oxidases in Mechanism of Fever. G. Marinesco.—p. 153.
Periodicity of Atomic Weights of the Main Constituents of Higher Organisms. C. Strzyzowski.—p. 156.
*Sugar in Cerebrospinal Fluid and Blood. W. Mestrezat.—p. 157.
*Liver Cells and Protein Metabolism. R. Noel.—p. 158.
*Sun Rays and Rachitis. P. F. Armand-Delille.—p. 159.

Oxidating Ferments in Mechanism of Thermogenesis and Fever.—Marinesco examined histologically the amount of oxidating ferments under different conditions in animals and in men. He found a remarkable parallelism between function, temperature and the amount of these ferments. The heart of birds contain more of them than the heart of mammals, and much more than of frogs. He found them even in the glomeruli of kidneys, where they are present in mammals only in the embryonic stage. Hibernating frogs do not have much oxidase in muscles. This content increased if he kept these animals at a higher temperature. A very remarkable fact is that he could never find any trace of oxidases in the liver of frogs, while they abound in the liver of warmblooded animals. Hypothyroidism and avitaminosis cause diminution of them; certain islands in the liver lack them entirely in such cases. Embryos have a large amount of oxidases, even in organs whence they disappear later (peripheral nerves, nucleated red corpuscles, etc.). He believes that leukocytosis is an important factor in the mechanism of fever, because leukocytes are filled with oxidating ferments. He found a parallelism between the number of leukocytes and the fever in fatal cases of apoplexy. He believes that oxidases are the instrument with which the organism maintains or varies its temperature. The nervous system serves only to coordinate the vascular reactions which play a part in the distribution of cells containing oxidases.

Sugar in Cerebrospinal Fluid and Blood.—Mestrezat found in twenty normal cerebrospinal fluids from 0.055 to 0.065 per cent. of glucose. The average in twenty-five cases was 0.06, with variations from 0.048 to 0.070.

Liver Cells and Protein Metabolism.—Noel found in mice, without regard to diet modifications, mitochondria of the liver cells, which he considers as protein material in the process of elaboration ("proteoplasts").

Sun Rays and Rachitis.—Armand-Delille surveys the preventive and therapeutic effects of sun-rays in rachitis.

Schweizerische medizinische Wochenschrift, Basel

53: 161-184 (Feb. 15) 1923

Heredity in Diseases of Eyes. A. Vogt.—p. 161. Conc'n p. 188.
Atypical Course of Primary Carcinomas of Lung. Hedinger.—p. 165.
*Associated Phenomena with Extrapyramidal Rigidity. Bing.—p. 167.
Epidemic of Pemphigus. H. Schultheiss.—p. 171.
Two Cases of Rare Malformation of Heart. H. Trenkel.—p. 173.

Associated Phenomena in Extrapyramidal Rigidity.—Bing found among sixty-two patients with a postencephalitis parkinsonian syndrome, two patients who were not able to sit still (Haskovec's akathisia). Sixteen patients were able to dance and make other rapid movements, though they were otherwise rigid (paradoxic kinesia). He found frequently in the writing of these patients a tendency to make the letters progressively smaller (micrography).

53: 209-256 (March 1) 1923

*Annual Meeting of Swiss Surgical Society.—p. 209.
Multiple Hemangiomatous Tumors in Thorax. R. Schweizer.—p. 243.
Prophylaxis of Goiter. H. Eggenberger.—p. 245.
*Duodenal Tube with Automatic Stopper. Baer.—p. 250.

The Constitution from the Surgical Standpoint.—This was the main subject discussed at the annual meeting of the Swiss Surgical Society, addressed by Askanazy, Vulliet and Kocher, opening the discussion.

Duodenal Tube with Stopper.—Baer gives illustrations of his double, fused tube, terminating in a rubber bulb. The inflated bulb plugs the outlet to the duodenum, and the contrast suspension, injected through the side opening in the metal olive, fills up the duodenum. He suggests that a second bulb might be added, to plug the pylorus, and the suspension or air might then be forced into the bile passages.

Riforma Medica, Naples

39: 145-168 (Feb. 12) 1923

*Absorption Experiment in Diagnosis. A. Fragomele.—p. 145.
*Cholesterol Content of the Tonsils. L. Maffeo.—p. 146.
*Busacca's Intracutaneous Reaction in Tuberculosis. Palmieri.—p. 148.
*Relation of Erythrocytes to Blood Pressure. Lenaz.—p. 152.
Infectious Diseases in Province of Lecce. G. Candido.—p. 157.
Helminthiasis. G. Molinari.—p. 158.

Absorption Experiment in Diagnosis of Some Infectious Diseases.—Fragomele recommends Castellani's experiment (specific absorption) in cases where the agglutinin titer of the patient's serum is low or where it is high because of the presence of co-agglutinins.

Cholesterol Content of Pharyngeal and Palatal Tonsils.—Maffeo found a very low cholesterol content (0.0001 to 0.087 per cent.).

Busacca's Intracutaneous Reaction in Tuberculosis of Skin.—Palmieri examined a large number of patients suffering from tuberculous lesions of the skin, using also controls, with Busacca's intracutaneous injections of 0.2—0.3 c.c. of normal horse serum. The reaction is of no practical value.

Relation of Number of Erythrocytes and Blood Pressure.—Lenaz believes that the relation between the blood pressure and the number of erythrocytes is of diagnostic and prognostic significance, especially with regard to decompensation of heart and of kidneys.

Gaceta Médica de Caracas, Venezuela

29: 283-304 (Dec. 31) 1922

*The Pasteur Centennial. L. Razetti et al.—p. 284.
The Fight Against Malaria in Venezuela. R. Medina Jiménez.—p. 294.

The Pasteur Centennial in Venezuela.—This entire special number of the *Gaceta* is devoted to a tribute to Pasteur for which the profession of Venezuela had been preparing for more than a year. A public subscription was organized, a prize offered for the best work on national hygiene, and Pasteur's portrait was placed in the hall of the Academia de Medicina with much ceremony and historical surveys. The prize was awarded to Dr. R. Medina Jiménez for his work demonstrating the necessity for a vigorous campaign against malaria in Venezuela, and outlining ways and means to carry it out.

Siglo Médico, Madrid

71: 201-224 (March 3) 1923

*Mental Disease of Endocrine Origin. A. Fernandez-Victorio.—p. 201.
*Mucomembranous Colitis. C. Jiménez Díaz.—p. 203.

Endocrinopsychopathies.—Fernández-Victorio relates that a youth, of good family and a brilliant student, suddenly lost interest in his studies and family and developed a paranoid schizophrenic state. A tendency to adiposogenital dystrophia was pronounced and the young man was abnormally tall. This suggested that the pituitary was responsible for the endocrinopsychopathy, but pituitary treatment alone and thyroid treatment alone failed to benefit. Under mixed organotherapy, marked improvement was realized.

Mucomembranous Colitis.—Jiménez Díaz protests against this term, saying that proper treatment requires us to distinguish between stercoraceous mucous colitis and vagotonic mucous colitis. The latter is an actual myxoneurosis of the colon. It may be of primary constitutional origin, or secondary to acquired overstimulation of the vagus nerve, modifying the constitution. The expulsion of membranes merely signifies the coexistence of mucus and fat acids.

71: 249-276 (March 17) 1923

*The Teeth in Relation to Chronic Rheumatism. G. Marañon.—p. 249.
*Gumma of Inner Canthus. M. Marin Amat.—p. 254.
Spirochetal Diseases from Immunologic Standpoint. W. H. Hoffmann.—p. 256. Begun p. 225.

Rheumatism of Dental Origin.—Marañon says that the idea of an infectious focus in the teeth as responsible for chronic rheumatism is still in embryo in Europe, and he urges the profession in Spain to listen to the Americans on the subject. Although he accepts infectious conditions in the teeth as an important factor in a certain group of cases of chronic

rheumatism, he insists that a predisposition in the way of disturbance of metabolism and body juices is always the primary factor.

Gumma of the Inner Canthus Simulating Malignant Disease.—In Marín Amat's case the tumor developed in the lacrimal region. He assumed at first that it was a furuncle, having had a number of cases of furuncles in the inner canthus. But the rapidly destructive course suggested tentative treatment as for syphilis, although the serologic tests were negative. No benefit was observed under mercury, but on supplementing this with an arsphenamin preparation, the lesion promptly retrogressed. The patient was a woman, aged 33. No other manifestations of syphilis were detected.

Archiv für Kinderheilkunde, Stuttgart

72: 161-240 (Feb. 6) 1923

*Influence of Phosphates on Excretion of Chlorids. W. Röckemann.—p. 161.
Therapeutic Action of Mercury and Arc Lamps. Hermann.—p. 172.
*Tendency to Edema in Infants. E. Slawik.—p. 178.
*Respiratory Stridor, Especially in Goiter. F. Wiltschke.—p. 189.
*Schick Test in Diphtheria. J. Geissmar.—p. 194.
*Histophysiology of Irradiation with Quartz Lamp. A. Eckstein and W. Möllendorff.—p. 205.

Influence of Phosphates on Excretion of Chlorids.—Röckemann found retention of chlorids in children during periods of ingestion of primary sodium phosphate.

Tendency to Edema in Infants.—Slawik reviews edema in infants. He believes that scleredema is only a species of the comparatively frequent edema of new-born children. The difference lies in the subnormal temperature of infants suffering from scleredema, in which the subcutaneous fat becomes hard.

Respiratory Stridor, Especially in Goiter. — Wiltschke emphasizes the significance of goiter for the genesis of respiratory stridor in infants. He never found stridor in infants in whom necropsy showed the presence of a hyperplastic thymus. Iodin cures the stridor, because the goiter disappears.

Schick Test in Diphtheria.—Geissmar gives the history and technic of Schick's test. She recommends that it be adopted in Germany more extensively in the fight against diphtheria.

Histophysiology of Irradiation with Quartz Lamp.—Eckstein and Möllendorff injected rats with trypan blue and irradiated them with a mercury quartz lamp. They found in the irradiated animals a very strong accumulation of the dye in the kidneys in the first hours, while the controls did not show at the time any changes. Later the controls had more dye in the kidneys than the irradiated animals.

Deutsches Archiv für klinische Medizin, Leipzig

141: 257-380 (Jan. 30) 1923

*Atrioventricular Automatism. W. Mobitz.—p. 257.
*Cholesterol Metabolism. S. Thannhauser.—p. 290.
Experimental Nephritis by Injection of Uric Acid. Aufrecht.—p. 312.
*Formation of Urobilin in Intestines. Kämmerer and Miller.—p. 348.
Disturbances of Conduction and of Irritability of Heart. H. von Hoesslin.—p. 348.
*Sugar in Blood and Tissues in Diabetics. Barát and Hetényi.—p. 358.
*Function of Skin Capillaries. L. A. M. van der Spek.—p. 366.

Atrioventricular Automatism. — Mobitz finds that certain well characterized dissociations between auricle and ventricle may be due to an interference of the impulses from the sinus and Aschoff's node, if the latter are more frequent. These interference dissociations are usually incomplete.

Cholesterol Metabolism.—Thannhauser found that the duodenal contents and the bile are able to split esters of cholesterol if it is dissolved (best in fat). Ingestion of fat is necessary for the resorption of cholesterol. If human blood is incubated, the amount of free cholesterol does not change. This, however, is not due to lack of a ferment splitting the esters, but simply to the already existing equilibrium between them and the free cholesterol. If esters are added to the blood, the amount of the free cholesterol increases. He publishes a method for estimating the cholesterol and bile acids in human feces, and made determinations of their metabolism. The necessary daily minimum of cholesterol is in adults approximately 0.03 gm. There were no indications as to the ability of adults to synthesize cholesterol. An increased cholesterol intake does not cause increase in the production of bile acids. They do not seem to be the end-product of normal decomposition of cholesterol, but rather a physiologic secretion of the liver.

Formation of Urobilin in Intestines.—Kämmerer and Miller found that an emulsion of almost any human stool may reduce chemically pure bilirubin and mesobilirubin to urobilin. Biliverdin was not reduced by it, nor do the feces of herbivora reduce bilirubin, probably because their fermentation is stronger than putrefaction. The optimal p_H is = 7.0. Berkefeld filtrates of the stools caused no reduction. The responsible microbes are identical or similar to the anaerobic *Bacillus putrificus*. Yet synergism with aerobic bacilli, which are without effect when used alone, is essential. Colon bacilli increase the formation of bilirubin if there is no material for fermentation. Otherwise they inhibit the reduction, as do sugar or starch.

Sugar in Blood and Tissues in Diabetics.—Barát and Hetényi found an increased amount of sugar in tissues of diabetics, but not in other hyperglycemias.

Function of Skin Capillaries.—Spek found that the blood stream in the capillaries of a constricted finger is maintained if the pressure exerted by a broad finger cuff is only 10 mm. mercury lower than the maximal actual pressure measured on the finger. In insufficient capillaries this difference is higher, especially in hypertonia. He considers this method of investigation of the circulation by means of capillary functioning as better than Weiss' because it is restricted to this small area of the capillaries, and is not so dependent on the action of the heart. He tabulates the various findings from 120 persons, healthy and with various diseases.

Deutsche medizinische Wochenschrift, Berlin

49: 175-206 (Feb. 9) 1923

*Treatment of Syphilitic Aortitis. Schottmüller.—p. 175.
Serum Treatment of Influenza and Botulism. W. Steinbrinck.—p. 176.
Different Tuberculin Preparations in Pirquet Tests. Schreiber.—p. 178.
*Diagnosis of Pancreas Stones. J. L. A. Peutz.—p. 178.
*Diagnosis of Contraction of Mesentery. E. Schill.—p. 179.
Diagnostic Trepanation of Sternum. Seyfarth.—p. 180.
Acute Osteomyelitis of Spine. A. Wagner.—p. 181.
*Phlorizin in Diagnosis of Pregnancy. P. Köster.—p. 182.
Toxicity of Methyl Alcohol. G. Reif.—p. 183.
*Comparison of Serologic Tests. H. Förtig.—p. 184.
Melting Mercury Rods for Intramuscular Injections of Insoluble Compounds of Mercury. Pinczower.—p. 185.
*Choked Disk in Syphilis. R. Baruch.—p. 186.
*Arsphenamin in Malaria. K. Surbek.—p. 187.
"Combined" Treatment of Epilepsy. Rosenberg.—p. 188.
Formaldehyd Test for Albumin in Urine. Kaufmann.—p. 190.
"Fat Splitting Function of Lymphocytes." S. Bergel.—p. 190.
The Practitioner and Pulmonary Tuberculosis. Goldscheider.—p. 191.
Hygienic Teaching of People. G. Tugendreich.—p. 193.
Tuberculosis, Legitimacy and Illegitimacy. H. Reiter.—p. 194.

Treatment of Syphilitic Aortitis.—Schottmüller considers syphilitic aortitis, especially in its first stage, as curable. He recommends intensive and prolonged treatment with arsphenamin and mercury. The treatment should be tried even in decompensated syphilitic aortic insufficiency. He has roentgenograms of a man whose ascending and descending aorta in 1913 were three times the normal diameter. The man took part in the war as artillery officer, and has no subjective disturbances now. A patient suffering from aneurysm in 1916 is still living, as well as other similar cases. The aneurysm may become smaller. Syphilitic affections of the coronaries may be very favorably influenced. He starts with weekly injections, from 0.45 to 0.6 gm. (in women 0.3 to 0.45) of neo-arsphenamin, giving a total of 5 to 8 gm. Besides this, he injects weekly calomel or salicylate of mercury (0.05 to 0.1 gm.). After this he prescribes potassium iodid for a month or two. As a rule, especially with a positive Wassermann reaction, the patient gets for two or three years one injection of neo-arsphenamin monthly, or at least two intensive treatments as above, with a total of 5 gm. in a year.

Diagnosis of Pancreas Stones.—Peutz considers repeated microscopic examination of feces, especially after the Schmidt-Kashiwado nuclei test, as a good method. The increase of bilirubin in the serum after an attack speaks for

cholelithiasis. He injected one patient with pilocarpin, after which the amount of diastase in the blood increased. Pancreatic ferments were not present in the stool. Roentgenray examination revealed a shadow in the pancreas region, due to calcified mesenteric glands, and not to calculi in the pancreas.

Diagnosis of Contraction of Mesentery.—In cases with free ascites giving no tympanitic percussion note at all or only low in the flanks, Schill concludes that retraction of the mesentery has taken place. It may be due to carcinosis or tuberculosis of the peritoneum. He does not mention that Thomayer thirty years ago described an abnormal distribution of the percussion sounds as a sign of retraction in tuberculosis and carcinosis of the peritoneum.

Phlorizin in Diagnosis of Pregnancy.—Köster examined 100 cases with the phlorizin test. She found that a positive result does not always prove, nor the negative disprove, pregnancy. The test may give opposite results on two successive days.

Comparison of Dold and Meinicke Reaction with Wassermann Reaction.—Förtig examined 450 serums. He objects to the Meinicke and Dold technics that they give too many false positive reactions.

Choked Optic Disk in Syphilis, Its Prognosis, and Treatment with Arsphenamin.—Baruch finds that optic neuritis in syphilis has not become more frequent since arsphenamin was introduced. Most of the patients recover after treatment.

Silver Arsphenamin, Neosilverarsphenamin and Sulphoxylarsphenamin in Malaria in Dutch East Indies.—Surbek recommends these preparations especially for carriers of gametes.

49: 207-240 (Feb. 16) 1923

Diuresis and Diuretics. F. Müller.—p. 207.
Recent Modifications of Serologic Tests. M. Schneider.—p. 209.
Treatment of Syphilis with Bismuth Preparations. Vochl.—p. 210.
*Errors in Diagnosis of Lead Poisoning. Schwarz and Hefke.—p. 212.
Paranephritic Abscess. F. Franke.—p. 214.
Osteoma of Frontal Sinus. H. Reh.—p. 216.
Diagnosis of Epidemic Encephalitis. E. Hachez.—p. 217.
Arsphenamin Encephalitis Treated with Epinephrin; Recovery. Voithenberg.—p. 217.
*Early Affection of the Auditory Nerve in Syphilis. M. Bab.—p. 218.
Examination of Speed of Sedimentation. A. Westergren.—p. 218.
Hemoglobinuria in Acute Infectious Diseases, Especially in Scarlet Fever. B. Günther.—p. 219.
Venesection. Burwinkel.—p. 221.
Jupiter Air Light in Therapeutics. A. Hartmann.—p. 221.
The Practitioner and Pulmonary Tuberculosis. Goldscheider.—p. 222.
Dermatological Diagnosis. M. Joseph.—p. 224.
Public Health Statistics in the United States. Sieveking.—p. 226.
A Picture of Copernicus as Physician. F. Sorge.—p. 226.

Errors in Early Diagnosis of Lead Poisoning.—Schwarz and Hefke agree with P. Schmidt on the four cardinal symptoms for early diagnosis of lead poisoning: complexion, border of gums, basophilic stippling of erythrocytes, and hematoporphyrin in urine. As a preliminary examination of blood, the "thick droplet" is useful.

Early Affection of the Auditory Nerve in Syphilis.—In 15 per cent. of primary syphilitic affections Bab found changes in the vestibular nerve (tendency to nystagmus, pastpointing reaction) even if no subjective signs were present. He considers the ear function test an aid in the diagnosis of primary syphilis.

Klinische Wochenschrift, Berlin

2: 285-332 (Feb. 12) 1923

Pathology of Urination. O. Schwarz.—p. 285.
Mechanism of Tonus of Muscles. E. A. Spiegel.—p. 288. Conc'n p. 339.
*Constitutional Types in Gynecology. P. Mathes.—p. 291.
*Muscularis Mucosae in Evacuation of Stomach. K. Sick.—p. 293.
*D'Herelle's Phenomenon. W. Borchardt.—p. 295.
*Acquired Resistance of Bacillus Prodigiosus. Meyer.—p. 297.
*Boiled Human Milk. E. Martin.—p. 299.
*Serologic Tests in Internal Medicine. A. Holländer.—p. 302.
*Influence of Vitamin A on Weight of New-Born. Schlossmann.—p. 304.
*Bilirubin and Fibrinogen in Blood. P. Levi.—p. 305.
*Thymus in Parthenogenetic Tadpoles. H. Voss.—p. 306.
*Urea Content in Saliva. M. Landsberg.—p. 306.
*Decapsulation of Kidney in Anuria. A. Niedermeyer.—p. 307.
Rare Malformation of Alae of Nose. T. Liebermann.—p. 307.
Use of Hypnotics in Neurology. F. Stern.—p. 308.
Venereal Diseases and Prostitution. Tjaden.—p. 312.

Constitutional Types in Gynecology.—Mathes points to the frequency of intersexual types in women. The most important sexual differentiation is not in the sex gland, but in the preponderance of one sex chromosome throughout the body. He considers the intersexual type as identical with Kretschmer's schizoid type in psychiatry. The vegetative nervous system and its center in the base of the brain are unstable. Such women are in a continuous struggle with the dysharmonious impulses of their ambiguous sexuality. The critical exacerbations come when they are forced bodily or mentally to a sexual decision: puberty, menstruation (dysmenorrhea), choice of mate (nuptial psychoses, vaginism), pregnancy (hyperemesis, functional heart disturbances), marital troubles due to inability to fulfil the duties of wife, mother and housewife, and the menopause. More cases of sterility are due to intersexuality, than to simple hypoplasia of the uterus. Dread neuroses and hopelessness are frequent in their affective life. The sexual traumas of childhood are not the real cause of the later neurosis; they are rather its precursors, and get a strong affective value only because everything sexual is a problem to these patients. Preparations of pituitary are sometimes valuable. They act on the vegetative centers perhaps directly, perhaps through their action on the sex glands. Psychic treatment should explain the condition to the patients, and either teach them to suppress their sexual tendencies, supplanting them by other qualities, or to develop the small feminine sexuality which they have. Older patients may be castrated by roentgen rays.

Action of Muscularis Mucosae in Evacuation of Stomach.—Sick found that small waves, which he attributes to the muscular layer of the mucosa, play a part in the evacuation of the last remnant of the meals.

D'Herelle's Phenomenon.—Borchardt found that extracts of pancreas of cats with the addition of an extract of the mucosa of the small intestine start the lytic phenomenon of bacteriophagy in bacilli of the colon group and staphylococci. Extracts from pancreas or from the mucosa alone were not active. He believes that trypsin leads to decomposition of the bacilli in such a way that it frees from their bodies a similar tryptic ferment. The results were negative with other micro-organisms.

Acquired Resistance of the Prodigiosus Against Roentgen Rays.—Meyer found that a culture of *Bacillus prodigiosus* can be made resistant, by irradiation, against subsequent applications of roentgen rays. These roentgen resistant strains were not resistant to ultraviolet rays. The acquired resistance lasted for about four weeks.

Boiled Human Milk.—Martin had excellent results with the use of boiled human milk in infants.

The Sachs-Georgi and Dold Reactions in Internal Medicine.—Holländer concludes from a study of 2,763 serums with the Sachs-Georgi reaction and 415 of them with the Dold reaction, that they are valuable as controls of the Wassermann reaction.

Influence of Vitamin A on the Weight of the New-Born.—Schlossmann publishes the average monthly weights of 13,805 infants from one clinic in eighteen years. He does not find any marked influence of the season. He declares that it would be dangerous to try to influence the weight and hardness of the skull by lack of vitamins in the food of the prospective mother.

Bilirubin and Fibrinogen in Blood.—Levi found that addition of proteolytic ferments to a serum giving the indirect reaction of Hijmans van den Bergh changes it quickly to a direct. He believes that physiologically the cells of the liver split bilirubin from a protein rest of hemoglobin. The indirect reaction is due to the binding of bilirubin to protein. The presence of proteolytic ferments in the blood can split this complex, and makes thus a safe differentiation between hematogenous and hepatogenous icterus with Bergh's test impossible.

The Thymus in Parthenogenetic Tadpoles.—Voss found in parthenogenetic tadpoles a very small thymus, resembling the cases of accidental involution due to lack of food. The alimentary canal and liver were abnormal in these animals, and the sex glands underdeveloped.

Urea Content in Saliva.—Landsberg found approximately the same amount of urea in saliva as in urine.

Recovery After Decapsulation of Kidney in Case of Uremic Anuria.—Niedermeyer's patient suffering from anuria and uremia recovered after decapsulation of one kidney.

2: 333-380 (Feb. 19) 1923

*Pathology of Growth in Childhood. H. Aron.—p. 333.
*Surgery of Angioneuroses. C. Kreibich.—p. 337.
*D'Herelle's Phenomenon. E. Putter and S. Vallen.—p. 339.
*Mechanism of Tonus of Striated Muscles. E. Spiegel.—p. 339. Conc'n.
*Action of Phlorizin on Sugar in Blood. M. Rosenberg.—p. 342.
*Question of Neurogenous Heterochromia of Iris. Heine.—p. 345.
*"Mitral Form" of Healthy Hearts. G. Német.—p. 348.
Formation of Bilirubin Outside of Liver. Papendieck.—p. 350.
*Specificity of Focal Reaction. C. Mau.—p. 351.
New Agglutinoscope. A. Korach.—p. 352.
Reaction Energy of Organic Arsenic and Antimony Compounds in Relation to Their Biologic Action. H. Schmidt.—p. 352.
*Action of Ultraviolet Rays in Avitaminosis. B. Ishido.—p. 353.
Epithelization with Roentgen Rays. H. Haberland.—p. 353.
Trauma as Factor in Syringomyelia. M. Zielaskowski.—p. 354.
Use of Hypnotics in Neurology. F. Stern.—p. 355. Conc'n.
School and Tuberculosis. S. Samelson.—p. 358.
Cultivation of Pure Strains of Cells. R. Erdmann.—p. 362.

Pathology of Growth in Childhood.—Aron deals with the causes of growth with special regard to over-tall children. In judging children, neither the weight nor the length is as important as harmonious proportions. "Sufficient muscular exercise can act against a disproportionate growth in height."

Surgery of Angioneuroses.—Kreibich agrees with Cassirer, who considered angioneuroses as irritative and not paretic phenomena. He believes that the cells die because of a vasomotor anemia and not from disturbances of trophic nerves. He found with Polland that a blister contains approximately blood serum (more proteins than an inflammatory exudate). He does not much believe in the existence of trophic nerves. Leriche's periarterial sympathectomy may act also centripetally, and should be tried in Kaposi's pigment sarcoma and other affections of the skin. It is possible, that a unilateral operation would be sufficient. He cites a case of psoriasis which disappeared on the side of the body on which the ulnar nerve was injured by a bullet, and other cases showing that there may be centripetal action.

D'Herelle's Phenomenon.—Putter and Vallen filtered bile, bouillon cultures, killed by heat, through de Haen's membrane filters, and found that the filtrates showed bacteriophagy.

Mechanism and Innervation of Tonus of Striated Muscles.—Spiegel finds that the tonus of striated muscles is due to the same changes in the fibrils (acid formation) as the quick contractions. The mechanism of both actions is centrad to the cells of the anterior horn of the spinal cord.

Action of Phlorizin on Sugar in Blood and Urine in Diabetes and Nephritis.—Rosenberg found frequently a stronger reaction to phlorizin in diabetics than in healthy subjects. It depends on the severity of the process. He believes that the action of phlorizin is not limited to the kidneys in these cases. In severe insufficiency of kidneys, the glycosuria is smaller and hyperglycemia occurs. He attributes it to an osmotic decompensation and not to the lack of glycosuria.

Question of Neurogenous Heterochromia of Iris.—Heine is very skeptical on the question of neurogenous heterochromia.

"Mitral Form" of Healthy Hearts.—Német found in healthy subjects that the outline of the heart sometimes resembled that in mitral stenosis. He believes that it may be due to a rotation of the heart from the right, dorsad, to the left, centrad.

Specificity of Focal Reaction.—Mau found a positive focal tuberculin reaction in forty-eight cases among 178 surgical patients. A typical focal reaction may also follow an injection of tuberculin in certainly not tuberculous lesions. The probability of tuberculosis in a positive focal reaction is about 80 per cent.

Compensatory Action of Ultraviolet Rays on Avitaminotic Disturbances of the Bone Marrow.—Ishido found that ultraviolet rays prevent the atrophy which would otherwise occur in the bone marrow of rats in avitaminosis.

Medizinische Klinik, Berlin

19: 163-194 (Feb. 11) 1923

*"Rheumatic" Infection. J. Wiesel.—p. 163. Conc'n p. 197.
Swedish Gymnastics. M. Kaufmann.—p. 165.
*Diseases of the Abdomen in and After Influenza. Esau.—p. 168.
Sugar Injections in Diseases of Heart and Vessels. Moewes.—p. 169.
Indications for Digitalis and Adonis. J. Citron.—p. 170.
Neo-silver arsphenamin. Nolten.—p. 171.
Stomach Function Test with Fluid Material. H. Galewski.—p. 174.
Diuretic Action of the Sulphur Thermal Water of Baden. J. Schütz.—p. 176.
Agglutination of Tubercle Bacilli. E. Christensen.—p. 177.
Estimation of Disability. Wulsten.—p. 178. Conc'n.
Sickness and Complaints of Schoolchildren. K. Blühdorn.—p. 181.
Recent Works on Cardiovascular Disease. E. Edens.—p. 183.

"Rheumatic" Infection.—Wiesel emphasizes the great frequency of a hypoplastic constitution in cases of acute polyarthritis. Heredity is almost always present.

Diseases of the Abdomen In and After Influenza.—Esau observed several cases of serous peritonitis in soldiers during the epidemic of influenza. The men fell sick suddenly with chills, vomiting, high fever and pains in the abdomen, but the abdominal muscles were not rigid. All the men recovered in ten to fourteen days. Influenza may also cause spasms of the intestine and pains in the musculature. Many such cases have been wrongly diagnosed and eventually operated on as appendicitis.

19: 195-230 (Feb. 18) 1923

Anesthesia in Surgical Operations. F. König.—p. 195.
Acute Rheumatic Arthritis. Wiesel.—p. 197.
*Determination of Virulence of Streptococci. C. Ruge. II.—p. 200.
Moral Depravity After Injury of Head. Rad.—p. 201.
Symptomatology of Pleuritis. L. Hess.—p. 203.
Temporal Crescent in a Scotoma in Migraine. O. Sittig.—p. 204.
Treatment of Angina Pectoris. G. Rosenfeld.—p. 205.
Periarteritis Nodosa. W. Löwenberg.—p. 207.
Lymphangioma of Small Intestine. E. Schnebel.—p. 208.
Estimation of Mental Fatigue in Children. Strauch.—p. 209.
*Instability of Serum Proteins in Syphilis. Krömeke.—p. 210.
Sarcoma of Left Kidney Not Due to Injury. A. Wilde.—p. 211.
Anodynes. C. Bachem.—p. 212. Cont'n.
Gynecology of Practitioner. E. Runge.—p. 214.

Determination of Virulence of Streptococci.—Ruge, in obstetric and gynecologic infections, takes 2 or 3 loopfuls of the genital secretions containing cocci, and mixes them with 0.5 c.c. of the defibrinated blood of the patient. He observes one drop of this mixture on a warm stage. Usually the cocci disappear gradually. If they start to multiply within the first four hours, the prognosis is unfavorable. This simple reaction serves to estimate the relation between virulence of the germs and resistance of the organism. If the germs are in the blood, an analogous method devised by Phillipp is useful: Serial plate cultures are made from the incubated blood every one or two hours. With very virulent germs, the number of colonies increase in the later portion. Ruge used his test in 111 women—usually infections in childbirth or miscarriage—and the test was done at a time when the clinical symptoms did not give a certain prognosis. Two cases were failures and five were doubtful. In all others its value was confirmed by the results, even when they contradicted the clinical expectations. The test may give valuable indications for operative proceedings.

Colloidal Lability of Serum Proteins in Syphilis with Regard to Darányi's Reaction. — Krömeke recommends Darányi's alcohol flocculation as a good indicator of the amount of toxins formed. He does not consider the Wassermann reaction an absolute indication for repeated treatment if Darányi's reaction is negative. The Wassermann reaction is much more frequently nonspecifically positive than is generally assumed.

Monatsschrift für Kinderheilkunde, Leipzig

24: 401-761 (Jan.-Feb.) 1923

Transactions of German Pediatrics Congress, Leipzig, 1922.

Münchener medizinische Wochenschrift, Munich

70:197-228 (Feb. 16) 1923

*Some Basic Problems of Nutrition. A. Bier.—p. 197.
*Nutrition After Injections of Blood of Animals. E. Kisch.—p. 199.
Shock Treatment of Chronic Affections of Joints and Muscles. A. Zimmer and E. Schulz.—p. 202.

*Endocrine Lesions of Genitals. Kämmerer and Lorber.—p. 203.
Protein Treatment of Septicemias. R. Koch.—p. 206.
Tabes from Practitioner's Standpoint. Curschmann.—p. 213.

Some Basic Problems of Nutrition.—Bier finds that vitamins, iron, arsenic and phosphate have no certain effect on nutrition. Exercises are more effective. Other measures are injections of foreign proteins, especially of animal blood. He attributes their action to the stimulating effect of products of their decomposition. This is the reason why he prefers to inject small quantities of animal rather than human blood. Hopeless cases of tuberculosis, severe exophthalmic goiter and chronic arthritis were favorably influenced. In one diabetic woman, cutaneous gangrene and carbuncle followed the injection of 0.2 c.c. of swine blood. Large and frequently repeated injections caused loss in weight. Psychic nutritive stimuli (more appetizing food) should not be neglected. Gymnastics should not be confined to one line; the whole body must be developed harmoniously.

Amelioration of Nutrition of Tuberculous Patients After Intravenous Injections of Blood of Animals.—Kisch made 300 intravenous injections of blood of different animals to test Bier's theory, mentioned in the preceding abstract. He chose the severest cases of tuberculosis. Collapse occurred rarely and there was no death. He injected small (5 c.c., decreasing to 1 c.c.) amounts of blood from different animals into the same patient. The weight of many patients started to increase after this treatment was instituted. Swine blood was most active. The injections caused a rapid but brief decrease in the number of erythrocytes (to 50 per cent.) with unchanged hemoglobin. Regeneration was rapid.

Cerebral Irritation in Endocrine Lesions of Genitals.—Kämmerer and Lorber point to the possibility of the localization of some cerebral sensory phenomena (headache, dizziness, even syncope) in the diencephalon, especially if other symptoms caused by its affections (disturbances of sex organs, obesity, polyuria) are present.

Wiener klinische Wochenschrift, Vienna

36: 121-138 (Feb. 15) 1923

*Surgery of Gallbladder. P. Walzel-Wiesentreu.—p. 121.
*Pyocyaneus Bacteriophages. S. Okuda.—p. 125.
Paresthesias and Edema Due to Roentgen Injury. L. Haas.—p. 128.
Treatment of Acute Roentgen Intoxication with Hypertonic Solutions. Mahnert and Zacher.—p. 129.
Influenza in Children. K. Dietl.—p. 130.
*Births and Miscarriages. E. Waldstein.—p. 131.

Surgery of Gallbladder.—Walzel-Wiesentreu does not recommend early operation except in urgent cases. One must not wait, however, too long. He dilates the papilla Vateri and introduces a rubber drain, which usually passes by the bowels after a short time. He considers this sufficient drainage. Primary suture of the abdominal wall is done only exceptionally in Eiselsberg's clinic.

Pyocyaneus Bacteriophages.—Okuda confirms Cancik's discovery of pyocyaneus bacteriophages. He found them in several cultures and preparations of these bacilli. They contain two specific types of bacteriophages.

Births and Miscarriages.—Waldstein finds that those who are worried about the supposed lack of will to procreate forget the spontaneous miscarriages. As long as the mortality of children has not been lowered at least to 7 per cent. and as long as poor women are exposed in a higher degree to spontaneous abortion, it is not fair to talk about a decrease in the will to procreate. He found that of the thirty-two children of one woman, repeatedly quoted as an example, only one child reached the age of 19; he prefers a smaller more valid progeny. He is opposed to artificial abortion, except when medically indicated; yet, he agrees with Grotjahn that preventive means are the best way to stop dangerous abortions. More of Waldstein's statistics were quoted in the Vienna Letter, p. 1328.

Zeitschrift für Kinderheilkunde, Berlin

35: 1-66 (Feb. 14) 1923

Hemopoietic Foci in Prostate and Skin of Soles in New-Born and Fetus. A. J. Weils.—p. 1.
Saliva of Infants. H. Davidsohn and A. Hymanson.—p. 10.
Weight of Thymus in Infants and Children, and Its Relation to the Suprarenal Capsules. K. Keilmann.—p. 25.
*So-Called Idiosyncrasy for Cow's Milk in Infants. Holstein.—p. 38.
Periodic Vomiting of Children. Gehrt.—p. 51.
Feeding with Boiled Human Milk. E. Wülffing.—p. 56.
Speed of Development and Constitution of Infants. Salge.—p. 59.

So-Called Idiosyncrasy Against Cow's Milk in Infants.—Holstein believes that the supposed idiosyncrasy of some infants against cow's milk is due to disturbance of the ion equilibrium. Cow's milk contains only a little more potassium than human milk, but too little chlorin to balance the excretion. Other foods containing too much potassium caused similar effects in a case described.

Zentralblatt für Gynäkologie, Leipzig

47: 417-464 (March 17) 1923

The Mechanics of Childbirth. A. Mueller.—p. 418.
*Combined Mercury and Arsphenamin in Sepsis. H. Kiehne.—p. 429.
*Albuminuria of Pregnancy. D. Fuchs and A. v. Fekete.—p. 433.
Torsion of Fallopian Tube. K. Laemmle.—p. 436.
Effect on Fetus of Morphin Given Mother. J. Brock.—p. 437.
Treatment of Leukorrhea by Continuous Irrigation. R. Kuhn.—p. 439.

Combined Use of Mercuric Chlorid and Neo-Arsphenamin in Puerperal Sepsis.—Kiehne reports good results, much better than had been formerly secured with silver salts, etc. If the patient does not improve under this treatment, placental remnants should be sought. From 1911 to 1921 the death rate from puerperal sepsis in the Halle clinic had ranged from 13 to 30 per cent. Since the introduction of the combined mercury-arsphenamin treatment, in 1922, the mortality has fallen below 10 per cent. Kiehne dissolves 0.3 gm. of neo-arsphenamin in 5 or 6 c.c. of tap water and adds 2 c.c. of a 1 per cent. solution of mercuric chlorid. The mixture is injected intravenously. After two or three days a second injection may be required. In some cases as many as five injections were given, the intervals being progressively longer.

Albuminuria of Pregnancy.—Fuchs and Fekete, in studying diseases of the kidneys during pregnancy, considered the question to what extent the changed body attitude in pregnant women might be the cause of albuminuria. It is well known that in certain constitutions, without pathologic changes in the kidneys, orthostatic or postural albuminuria occurs, which passes away when the position of the body is changed. It was therefore thought that possibly the changed attitude of the body in pregnant women might play a part in the genesis of albuminuria. Their experiments showed that the position of the body in the pregnant has no bearing on the presence of albuminuria; at the most, it may increase slightly an albuminuria already present.

Zentralblatt für innere Medizin, Leipzig

44: 81-128 (Feb. 10-17) 1923

*Hypertension with Hyperglycemia and Hyperuricemia. E. Kylin.—p. 81.

Hypertension with Hyperglycemia and Hyperuricemia.—Kylin divides hypertensions into a pure arterial form (in benign sclerosis of kidneys) and into a form in which the pressure in the capillaries is also increased (in acute glomerulonephritis). The morphologic changes, increased permeability and pressure in the capillaries make a diffuse affection of the capillaries in acute glomerulonephritis more than probable. These changes are not present in essential hypertension, and edema occurs in the latter disease, only if the heart is decompensated. The lability of blood pressure is here more characteristic than its height. This speaks, besides other reasons, for vasoconstriction due to nervous influence. The blood sugar is slightly increased, the carbohydrate tolerance lowered. Subcutaneous injection of 1 mg. epinephrin usually lowers the blood pressure in essential hypertension, but increases it in acute glomerulonephritis, as in healthy persons. Epinephrin usually does not increase the glycemia much in essential hypertension. He concludes that it indicates a disturbance of the vegetative nervous system—probably vagotonia. One form of diabetes characterized by hyperglycemia, hyperuricemia and hypertension belongs to this group of essential hypertension.